

RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

File: Receivers AC.

Bulletin: HQQ-1.

TECHNICAL BULLETIN

Page 1.

MODEL—"HQQ"

GRAMO-RADIO COMBINATION

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

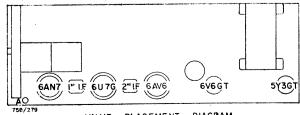
31 Metre Band, 9.4-9.8 Mc/s.

(Bandspread)

31.91-30.61 Metres (approx.)

, THIS BULLETIN CONTAINS:-

- 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 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.

Opera No.	ation 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.
 3. 	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. 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.

				3.
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	1400 Kc/s.	200MMF. Mica	Turn gang and dial pointer to
	terminal.		capacitor in series with generator.	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 (t	his band must be aligned before
10.	the 25 and 19 met To antenna		400 ahm man	More dial valetas and some to
10.	terminal.	9.6 Mc/s.	400 ohm non- inductive	Turn dial pointer and gang to 9.6 Mc/s. Adjust 31 metre
			resistor.	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
10	To outone	15 O Ma /a		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.		crystal calib		some well-known shortwave able, check the logging at each

BANDSPREAD COIL IDENTIFICATION MARKS

100 Kc/s. mark on the dial.

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.

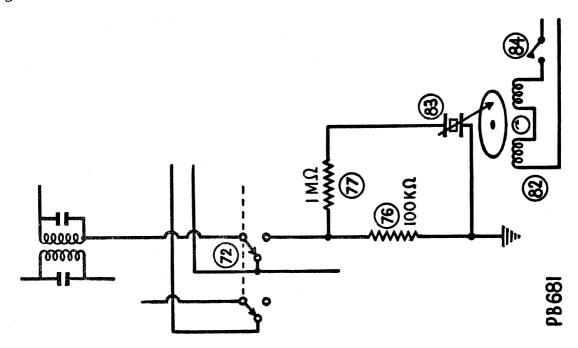
MODEL HOO 1st PRODUCTION RUN

Model HQQ receivers which have a two position gramo/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 HOO 2nd PRODUCTION RUN

Model HQQ receivers which have a two position gramo/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 HOQ 3rd PRODUCTION RUN

Model HQQ receivers which have a three position gramo/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.

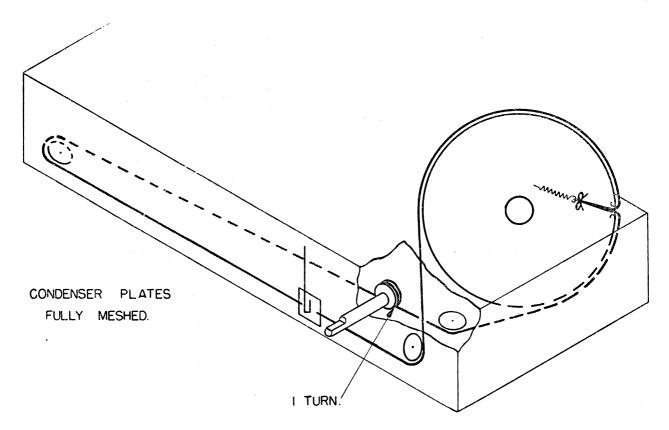
The orthodynamic head is a magnetic type with a small switch on the top of the pick-up head and has a weight compensation lever type switch on the side of the pick-up arm.

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

- Position 1: Radio operation.
- Position 2: Normal gramo operation. This position is used for the majority of records. However, if hum modulation is encountered on some records, turn gramo switch to position 3.
- Position 3: Special gramo position providing reduced bass frequencies to eliminate hum modulation.

Circu	it Description.	Tol.±	Rating	Part No.
No.	OF HED D	20%/	400U DOW	Daloo
1.	.25 MFD Paper Condenser.	20% 20%	400V.DCW. 400V.DCW.	PC128 PC103
2.	.1 MFD Paper Condenser1 MFD Paper Condenser.	20%	200V.DCW.	PC218
3. 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. 1000VT.	PC212
14.	.00046 MFD Mica Condenser.	$2\frac{1}{2}\%$ 10%	1000VI.	PC728 PC126
15.	.00025 MFD Mica Condenser.	10%	1000VI.	PC110
16. 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.	$2\frac{1}{2}$ % $2\frac{1}{2}$ % $2\frac{1}{2}$ % $2\frac{1}{2}$ %	1000VT.	PC871
21.	70 MMFD Silvered Mica Condenser.	$2\frac{1}{2}\%$	1000VT.	PC799
22.	50 MMFD Silvered Mica Condenser.	$2\frac{1}{2}\%$	1000VT.	PC801
23.	30 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC810
24.	15 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC811
25.	6 MMFD Silvered Mica Condenser.	+1MMFD-0		PC814
26.	4MMFD Ceramicon Condenser.		500V.DCW. 500V.DCW.	PC830 PC830
27.	4 MMFD Ceramicon Condenser.	TMIMIT D=O	300 V • DCW •	PC636
28.	2 Gang Varb. Condenser. 0-30 MMFD Trimmer Cond. Wire Wound.			PC663
29. 30.	1.5-18 MMFD Trimmer Condenser.			PC250
31.	16 MED Ellytic, Cond. Tol. + 20% 525PV.)			
32.	16 MFD E'lytic. Cond. Tol. ± 20% 525PV. 16 MFD E'lytic. Cond. Tol. ± 20% 525PV.	Combination	type.	PC760
33.	25 MFD E'lytic. Cond. Tol. ± 20% 40PV.			
34.	10 Megohm Carbon Resistor.	10%	1 W.	PR236
35.	3 Megohm Carbon Resistor.	10%	$\begin{array}{ccc} \frac{1}{2} & W \bullet \\ \frac{1}{2} & W \bullet \\ \frac{1}{2} & W \bullet \end{array}$	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%	1 W. 1 W.	PR245 PR496
39.	.25 Megohm Carbon Resistor.	10% 10%	i W.	PR165
40.	100,000 ohm Carbon Resistor. 100,000 ohm Carbon Resistor.	10%	$\frac{1}{2}$ W.	PR103
41. 42.	60,000 ohm Carbon Resistor.	10%	1 W.	PR415
43.	50,000 ohm Carbon Resistor.	10%	1 W • 1 W •	PR160
44.	50,000 ohm Carbon Resistor.	10%	1/2 W.	PR160
45.	50,000 ohm Carbon Resistor.	10%	$\frac{1}{2}$ W.	PR160
46.	30,000 ohm Carbon Resistor.	10%	$\frac{1}{2}$ W.	PR151
47.	20,000 ohm Carbon Resistor.	10%	l W.	PR171
48.	5,000 ohm Carbon Resistor.	10%	1 W • 1 W •	PR250
49.	2,000 ohm Carbon Resistor.	10%	½ W•	PR253
50.	2,000 ohm Carbon Resistor.	10%	½ VV • 1 1X7	PR253 PR176
51.	200 ohm Wire Wound Resistor.	10%	文 W· 上 W	PR258
52.	300 ohm Wire Wound Resistor.	10% 10%	7 W.	PR122
53.	300 ohm Wire Wound Resistor. 50 ohm Wire Wound Resistor.	10%	1 W.	PR280
54.	25 ohm Wire Wound Resistor.	10%	$\frac{1}{2}$ W.	PR281
55. 56.	100,000 ohm Potentiometer.	20%	2	PR663
57.	500,000 ohm Pot. tapped at 40,000 ohms an	ıd		
57.	with DP.ST. switch attached.	20%		PR662
	## 1-4 P	, -		

15. 17. Transformer P7889 P7880 P7	Circu No.	lit	Description	Tol	± Rating	Part No.
Free	58.	IF. Transformer.		er for the first of the first o		PT869
0scl. Coil B/cest. PT860 19 Metre Bandspread Coil (white spot on coil). PT914 PT914 PT915 PT915 PT915 PT915 PT915 PT915 PT915 PT915 PT915 PT916	59.	IF. Transformer.				
19 Metre Bandspread Coil (blue spot on coil). PT013		Antenna Trans. E	3/cast. (iron core	d).		PT905
25 Metre Bandspread Coil (white spot on coil). PT912						PT860
64. Sbeaker Input Trans. 5,000-2 ohns Imped. KBG81 PT799 66. Choke, 14H, 60 Ma. 520 ohns. France Choke		19 Metre Bandspr	ead Coil (blue sp	ot on coil).		PT914
Speaker Input Trans. 5,000-2 ohms Imped. KBG81 PT796	63.	25 Metre Bandspr	read Coil (white s	pot on coil).		PT913
66. Choke, 14H, 60 Ma. 520 chms. PT806 7 Power Transformer, 200-280 Volt 50 cycle mains. PT807 Power Transformer, 200-280 Volt 40 cycle mains. PT809 8. Wave change witch. S169 8. Wave change witch. S169 8. Mayer change witch. S169 8. Wave change witch. S169 8. Mayer change witch. S169 8. Wave change witch. S169 8. Dial Lemp, 6.37. 0.254. Min. Screw Base, T 3½ Bulb. PM673 70. 12" Permag. Speaker, type 12M magnet. R172 71. SMMFD (Fart of antenna coil circuit No. 60). PM625 72. Switch-gramo/radio 2 Deck each 3 pole 2 way PM653 73. Switch-gramo/radio 2 Deck each 3 pole 3 way PM653 74004 MFD Paper Condenser 10%, ½ W. PR037 75. 5. Megohm Carbon Resistor 10%, ½ W. PR037 76. 100,000 ohm Carbon Resistor 10%, ½ W. PR037 78. Record Changer: Collaro 3-speed type 3RC521 with orthodynamic head. 200-250V. 50 cycle operation (includes coupling trens. and pick-up head) 231/524 80. Replacement Orthodynamic Head (includes twin needle) Special Grub Screw for drive bush 194/415 81. Replacement Twin Needle Motor ON/OFF Switch - part of record changer Replacement Twin Needle Screw for drive bush Special Grub Screw for drive bush 2194/815 82. Replacement Pick-up head, green spot for 78. RFM recordings Replacement Pick-up head, green spot for 78. RFM recordings 194/415 83. Replacement Pick-up head, green spot for 78. RFM recordings 194/415 84. Replacement Pick-up head, green spot for 78. RFM recordings 106/524 84. Motor ON/OFF Switch part of record changer 106/524 85. Replacement Pick-up head, green spot for 78. RFM recordings 106/524 86. Special Grub Screw for drive bush 194/415 87. Special Grub Screw for drive bush 194/415 88. Replacement Pick-up head, green spot for 78. RFM recordings 106/524 89. Oolom Grabon Resistor 10% 1W. PR168 80. Oolom Grabon Resistor 10% 1W. PR168 81. Special Grub Screw for drive bush 194/415 82. Replacement Pick-up head, green spot for 80. RFM recordings 106/524 83. Replacement Pick-up head, green spot for 98. RFM recordings 106/524 84. Motor ON/OFF Switch part of record changer 106/524 85. Special Grub S	64.					PT912
Power Transformer, 200-250 Volt 50 cycle mains. PTB07	65.	Speaker Input Tr	rans. 5,000-2 ohms	Imped. KBG81		PT799
Power Transformer, 200-260 Volt 40 cycle mains. PT809	66.					PT806
Sample S	67.	Power Transforme	er, 200-250 Volt 5	O cycle mains.		PT807
10		Power Transforme	er, 200-260 Volt 4	O cycle mains.		PT809
12" Fermag, Speaker, type 12M magnet. R172	68.	Wave change swit	ch.			S16 9
71. SMMFD (Part of antenna coil circuit No. 60). PC825 72. Switch-gramo/radio 2 Deck each 3 pole 2 way PM655 73. Switch-gramo/radio 2 Deck each 3 pole 3 way Stato- 74004 MFD Paper Condenser 20% 600V. DCW PC221 755 Megohm Carbon Resistor 10% ½ W. PR245 76. 100,000 ohm Carbon Resistor 10% ½ W. PR246 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) 231,524 79. Replacement Orthodynamic Head (includes twin needle) 219/524 79. Replacement Orthodynamic Head (includes twin needle) 221,524 80. Coupling Trans. Paper twin Needle Motor ON/OFF Switch - part of record changer P7859 81. Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. 50-2000 preation 231,524 82. Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. 50-2001 preation 231,524 83. Replacement Pick-up head, green spot for 78. RPM recordings 231,524 84. Replacement Pick-up head, red spot for 45 85. Replacement Pick-up head, red spot for 45 86. MRD Mica Condenser 10% 1000VT PC141 87. So,000 Ohm Carbon Resistor 10% 1000VT PC141 88. 25,000 Ohm Carbon Resistor 10% 1W. PR115 88. 25,000 Ohm Carbon Resistor 10% 1W. PR115 89. 0.000 MRD Mica Condenser 10% 1000VT PC141 89. 0.000 MRD Mica Condenser 10% 1000VT PC141 89. 0.000 MRD Mica Condenser 10% 1W. PR115 80. 0.000 MRD Mica Condenser 10% 1W. PR116 81. So,000 Ohm Carbon Resistor 10% 1W. PR116 82. PM323 Dial Reading 21/760 83-pin Socket PM27 Antenna Terminal PM306 84-pin Socket 279/250 Dial Pointer Assy. A104/760 85-pin Socket 279/250 Dial Pointer Assy. A104/760 86-pin Socket 140/458 Dial Reading Clamp 15/760 87-pin Socket 279/250 Dial Pointer Assy. A104/760 86-pin Socket 166/60-14 87-pin Socket 279/270 Dial Background Assy. A104/760 88-pin Socket 279/270 Dial Background Assy. A104/760 88-pin Socket 279/270 Dial Pointer Assy. A104/760 89-pin Socket 2	69.	Dial Lamp, 6.3V.	0.25A. Min. Scre	w Base, T 3¼ Bull	b.	PM678
72. Switch-gramo/radio 2 Deck each 3 pole 2 way	70.	12" Permag. Spea	aker, type 12M mag	net.		K172
Switch_gramo/radio 2 Deck each 3 pole 3 way	71.	8MMFD (Part of a	antenna coil circu	it No. 60).		PC825
74004 MFD Paper Condenser 75. 5 Megohm Carbon Resistor 76. 100,000 ohm Carbon Resistor 77. 1 Megohm Carbon Resistor 78. Record Changer: Collaro 3-speed type 3RC521 with orthodynamic head. 200-250V. 50 cycle operation (includes coupling trans. and pick-up head) 79. Record Changer: Collaro 3-speed type 3RC521 with orthodynamic head. 200-250V. 50 cycle operation (includes Special Grub Screw for drive bush 79. Replacement Orthodynamic Head (includes twin needle) 80. Coupling Trans. 81. Replacement Twin Needle 81. Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. 82. Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. 83. Replacement Pick-up head, green spot for 78. RFM recordings 84. Replacement Fick-up head, green spot for 78. RFM recordings 85. Replacement Fick-up head, green spot for 78. RFM recordings 86. MFD Eilytic Cond. 86. MFD Mica Condenser 87. O0005 MFD Mica Condenser 88. 25,000 Ohm Carbon Resistor 89. 100005 MFD Mica Condenser 80. 00005 MFD Mica Condenser 81. So,000 Ohm Carbon Resistor 82. 5,000 Ohm Carbon Resistor 83. 100 MFD Paper Cond. 84. PMS1 Scord Resistor 85. 200 Ohm Carbon Resistor 86. MFD E'lytic Cond. 87. 50,000 Ohm Carbon Resistor 88. 25,000 Ohm Carbon Resistor 89. 101 Paper Cond. 80. 101 Paper Cond. 80. 2026 525 PV. PC313 87. 50,000 Ohm Carbon Resistor 80. 102 1 M. PR116 80. 101 Paper Cond. 81. PMS26 82. 5,000 Ohm Carbon Resistor 82. 5,000 Ohm Carbon Resistor 83. 12 1 Reading Clamp 84. 104/68 85. 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	72.					PM635
75. 5. Megohm Carbon Resistor 100% 1 W. PR245 76. 100,000 ohm Carbon Resistor 10% 2 W. PR103 77. 1 Megohm Carbon Resistor 10% 2 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 79. Replacement Orthodynamic Head (includes twin needle) 219/524 80. Coupling Trans. PR258 81. Replacement Twin Needle M291 82. Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. 50-cycle operation M291 82. Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. 50-cycle operation M291 83. Replacement Pick-up head, green spot for 78. RPM recordings 194/415 83. Replacement Pick-up head, green spot for 78. RPM recordings 196/524 84. (00005 MFD Mica Condenser 10% 1000VT PC141 85. Replacement Pick-up head, red spot for 45 and 33-1/3 RFM recordings 197/524 Motor ON/OFF Switch part of record changer 197/524 Motor ON/OFF Switch part of record changer 197/524 Motor ON/OFF Switch part of record changer 107/524 Motor ON/OFF Switc	73.	Switch-gramo/rad	io 2 Deck each 3	pole 3 way		S130
77. 1 Megohm Carbon Resistor Record Changer: Collaro 3-speed type 3RC521 with orthodynamic head. 200-250V. 50 cycle operation (includes coupling trans. and pick-up head) Replacement Orthodynamic Head (includes twin needle) Replacement Twin Needle Replacement Twin Needle Replacement Twin Needle Replacement Twin Needle Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. Replacement Twin Needle Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. Special Grub Screw for drive bush Replacement Fick-up head, green spot for 78. RFM recordings Replacement Fick-up head, green spot for 78. RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up hea	74.	.004 MFD Paper (Condenser	20%	% 600V. DCV	V PC221
77. 1 Megohm Carbon Resistor Record Changer: Collaro 3-speed type 3RC521 with orthodynamic head. 200-250V. 50 cycle operation (includes coupling trans. and pick-up head) Replacement Orthodynamic Head (includes twin needle) Replacement Twin Needle Replacement Twin Needle Replacement Twin Needle Replacement Twin Needle Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. Replacement Twin Needle Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. Special Grub Screw for drive bush Replacement Fick-up head, green spot for 78. RFM recordings Replacement Fick-up head, green spot for 78. RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up hea	75.	.5 Megohm Carbon	n Resistor	109	% ½ W.	PR245
77. 1 Megohm Carbon Resistor Record Changer: Collaro 3-speed type 3RC521 with orthodynamic head. 200-250V. 50 cycle operation (includes coupling trans. and pick-up head) Replacement Orthodynamic Head (includes twin needle) Replacement Twin Needle Replacement Twin Needle Replacement Twin Needle Replacement Twin Needle Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. Replacement Twin Needle Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. Special Grub Screw for drive bush Replacement Fick-up head, green spot for 78. RFM recordings Replacement Fick-up head, green spot for 78. RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up head, red spot for 45 and 33-1/3 RFM recordings Replacement Fick-up hea	76.	100,000 ohm Cark	oon Resistor	109	% <u>1</u> ₩.	PR103
head. 200-250V. 50 cycle operation (includes coupling trans. and pick-up head) M289 40 cycle Drive Bush 231/524 5pecial Grub Screw for drive bush 194/415 79. Replacement Orthodynamic Head (includes twin needle) 219/524 79. Replacement Twin Needle M291	77.	l Megohm Carbon	Resistor	109	½ <u>1</u> ₩.	PR246
Coupling trans. and pick-up head	78.	Record Changer:	Collaro 3-speed t	ype 3RC52l with	orthodynamic	
40 oycle 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 Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. 50-cycle operation 40 cycle Drive Bush 231/524 Special Grub Screw for drive bush 231/524 Special Grub Screw for drive bush 194/415 83. Replacement Pick-up head, green spot for 78. RPM recordings Replacement Pick-up head, red spot for 45 and 33-1/3 RPM recordings 197/524 Motor ON/OFF Switch part of record changer - 10% 1000VT PC141 F1 F1 F1 F1 F1 F1 F1			head. 200-250V.	50 cycle operati	on (includes	
40 cycle Drive Bush 231/524 Special Grub Screw for drive bush 194/415 79. Replacement Orthodynamic Head (includes twin needle) 219/524 219/5			coupling trans. a	nd pick-up head)		M289
79. Replacement Orthodynamic Head (includes twin needle)			40 cycle Drive Bu	s h		231/524
Needle Coupling Trans. PT859 Replacement Twin Needle M291			Special Grub Scre	w for drive bush		
80. Coupling Trans. Replacement Twin Needle M291 81. Motor ON/OFF Switch - part of record changer Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. 82. Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. 83. Special Grub Screw for drive bush 231/524 83. Replacement Pick-up head, green spot for 78. RPM recordings 196/524 83. Replacement Pick-up head, green spot for 78. RPM recordings 197/524 84. Motor ON/OFF Switch part of record changer - 85. Motor ON/OFF Switch part of record changer - 86. MMFD E'lytic. Cond. Motor ON/OFF Switch part of the B/cast band. 86. MMFD 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. OlMFD. Paper Cond. 20% 600V.DCW. PC140 89. OlMFD. Paper Cond. 20% 600V.DCW. PC140 89. OlMFD. Paper Cond. 227/221 Dial Background Assy. A104/760 8-pin Socket A104/58 Dial Reading Clamp A104/698 8-pin Socket A104/58 Dial Reading Clamp A104/690 8-pin Socket 2279/250 Dial Drum A104/690 8-pin Socket A104/58 Dial Reading Clamp A104/690 8-pin Socket A104/58 Dial Reading Clamp A104/760 8-pin Socket A104/58 Dial Reading Clamp A104/760 8-pin Socket A104/58 Dial Background Assy. A104/760 8-pin Socket A104/58 Dial Pointer Assy. A104/760 8-pin Socket A104/58 Dial Escutcheon - moulded 202/81 8-pin Socket A104/58 Dial Escutcheon - moulded 202/81 8-pin Socket A104/58 Dial Escutcheon - moulded 202/81 8-pin Socket A104/58 Dial Background Assy. A104/760 8-pin Socket A104/58 Dial Escutcheon - moulded 202/81 8-pin Socket A104/58 Dial Background Assy. A104/760 8-	79.		Replacement Ortho	dynamic Head (in	cludes twin	,
80. Coupling Trans. 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. 83. Special Grub Screw for drive bush 231/524 83. Replacement Fick-up head, green spot for 78. RPM recordings 196/524 83. Replacement Fick-up head, green spot for 78. RPM recordings 197/524 84. Motor ON/OFF Switch part of record changer -						219/524
Replacement Twin Needle M291	80.		Coupling Trans.			
81. Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. So-cycle operation				Needle		M291
M287		Record Changer:	Collaro 3-speed t	ype 3RC521 with	twin plug-in	-
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 -					20011	M287
Special Grub Screw for drive bush 194/415						
Replacement Pick-up head, green spot for 78. RFM recordings 196/524					ì	
78. RPM recordings 196/524	23.	•				134/410
Replacement Pick-up head, red spot for 45 and 33-1/3 RPM recordings 197/524	00.				,p00 101	196/524
## and 33-1/3 RPM recordings 197/524 84.	23				t for 45	100/051
Motor ON/OFF Switch part of record changer -	00.				0 101 10	197/524
Solution Company Com	84.				ed changer	-01/021
85. { 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. 87. 50,000 Ohm Carbon Resistor 88. 25,000 Ohm Carbon Resistor 8901MFD. Paper Cond. 8901MFD. Paper Cond. 80. PM217 Antenna Terminal 81. PM306 82-pin Socket 83-pin Socket 84. PM532 Dial Reading 85-pin Socket 86. PM532 Dial Reading 87-pin Socket 87-pin Socket 88. 279/250 Dial Drum 89-pin Socket 80-pin Socket 80-pin Socket 8104/58 Dial Background Assy. 8104/698 82abinet - walnut colour 827/221 Dial Background Assy. 8104/760 82abinet Handles 8299/250 Dial Pointer Assy. 8102/760 82abinet Handles 8299/250 Dial Pointer Assy. 8102/760 82binet Handles 8299/250 Dial Pointer Assy. 8102/760 82binet Handles 8299/250 Dial Background Assy. 8102/760 82binet Handles 8299/250 Dial Background Assy. 8102/760 82binet Handles 8299/250 Dial Background Assy. 8102/760 82binet Handles 8299/250 Dial Pointer Assy. 8102/760 82binet Assy. 8102/760 8	01.	C.00005 MFD Mica				PC141
Trun 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 PM217 Antenna Terminal PM306 PM532 Dial Reading 21/760 PM532 Dial Reading Clamp 15/760 Pm217 Socket 279/250 Dial Drum A104/698 Cabinet - walnut colour 227/221 Dial Background Assy. A104/760 Cabinet Handles 299/250 Dial Pointer Assy. A104/760 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 6/622 Light Button - red 27/688-1 Knob - W/C 178/81 Light Button - clear 27/688-3 Knob Retaining Clips 22/755 Light Button - green 27/688-2 Knob G/R. Changeover 4/310-1 Pulley Small 17/87	85.	This part was a	dded to the last f	ew receivers of	the 3rd produc	
86. 8MFD E'lytic. Cond. 87. 50,000 Ohm Carbon Resistor 88. 25,000 Ohm Carbon Resistor 89OlMFD. Paper Cond. Valve Shield - 6U7G 8-pin Socket PM532 7-pin Socket PM532 PM217 PM532 PM218 PM306 PM532 PM219 PM306 PM532 PM318 PM306 PM306 PM532 PM318 PM306		run to eliminate	e oscillation at t	he L.F. end of t	the B/cast ban	d.
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 8-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 - W/C 178/81 Light Button - blue 27/688-3 Knob G/R. Changeover 4/310-1 Pulley Small 17/87				20%	525 PV.	
88. 25,000 Ohm Carbon Resistor 10% 1W. 20% 600V.DCW. PRI16 89. .01MFD. Paper Cond. 20% 600V.DCW. PC140 Valve Shield - 6U7G PM217 Antenna Terminal PM306 8-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 - blue 27/688-3 Knob Retaining Clips 22/755 Light Button - green 27/688-2 Knob G/R. Changeover 4/310-1 Pulley Small 17/87						
89OlMFD. Paper Cond. 20% 600V.DCW. PC140 Valve Shield - 6U7G PM217 Antenna Terminal PM306 8-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 - blue 27/688-3 Knob Retaining Clips 22/755 Light Button - green 27/688-2 Knob G/R. Changeover 4/310-1 Pulley Small 17/87						
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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						
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						
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Knob G/R. Changeover 4/310-1 Pulley Small 17/87						27/688-2
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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

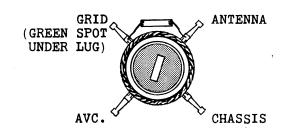
MAINS VOLTAGE.—The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

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.

(BLUE SPOT UNDER LUG) SERIES PAD

ANTENNA TRANS. B/C. (IRON CORED)



19, 25 AND 31 METRE ANT. TRANS.

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

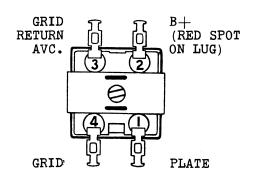
Lead from bottom lug (mounting end):-CHASSIS - EARTH.

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.

