



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

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

TECHNICAL BULLETIN

Bulletin: GQR-1.
File. Receivers AC.
Date: 1-9-53.
1.

MODEL GQR

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33½ 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:—

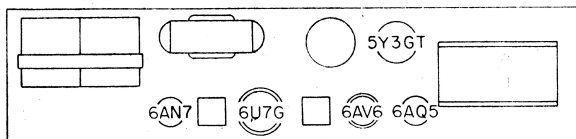
Broadcast Band, 535-1610 Kc/s.
19 Metre Band, 14.9-15.5 Mc/s. (Bandspread)
25 Metre Band, 11.6-12.1 Mc/s. (Bandspread)
31 Metre Band, 9.4-9.8 Mc/s. (Bandspread)

RECEIVER COVERAGE:—

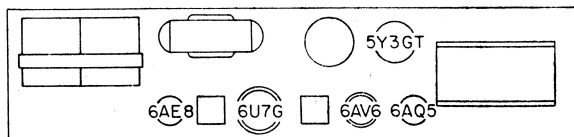
560.7-186.3 Metres.
20.13-19.29 Metres (approx.)
25.86-24.79 Metres (approx.)
31.91-30.61 Metres (approx.)

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.



VALVE PLACEMENT DIAGRAM 992/279



VALVE PLACEMENT DIAGRAM 910/279

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 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.

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. The pick-up lead plugs and sockets on early production receivers are beneath the motor board. Loosen off screws in AC. lead junction block and withdraw receiver AC. lead. Remove a $\frac{3}{8}$ " x No. 6 wood screw screwed through bracket in centre of chassis (the 6U7G valve may be removed for greater ease when removing this screw). From bottom of each end bracket on chassis remove a $\frac{5}{32}$ " machine screw. The chassis will then slide out of the cabinet. Refit chassis in exact reverse procedure to removing it.

Opera- tion 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 or 6AE8 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 1400 Kc/s. 200MMF. Mica Turn cond. gang and dial pointer until
lead capacitor in centre of dial pointer aligns with
from series with centre of 1400 Kc/s. spot on dial read-
receiver. generator. 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 9.6 Mc/s. 400 ohm non- Turn dial pointer and gang to 9.6 Mc/s.
lead from inductive Adjust 31 metre band oscl. coil. ind.
receiver. resistor. 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 11.8 Mc/s. 400 ohm non- Turn wave change switch to 25 metre
lead from inductive band. Turn dial pointer and gang to
receiver. resistor. 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 15.2 Mc/s. 400 ohm non- Turn wave change switch to 19 metre
lead from inductive band. Turn dial pointer and gang to
receiver. resistor. 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.

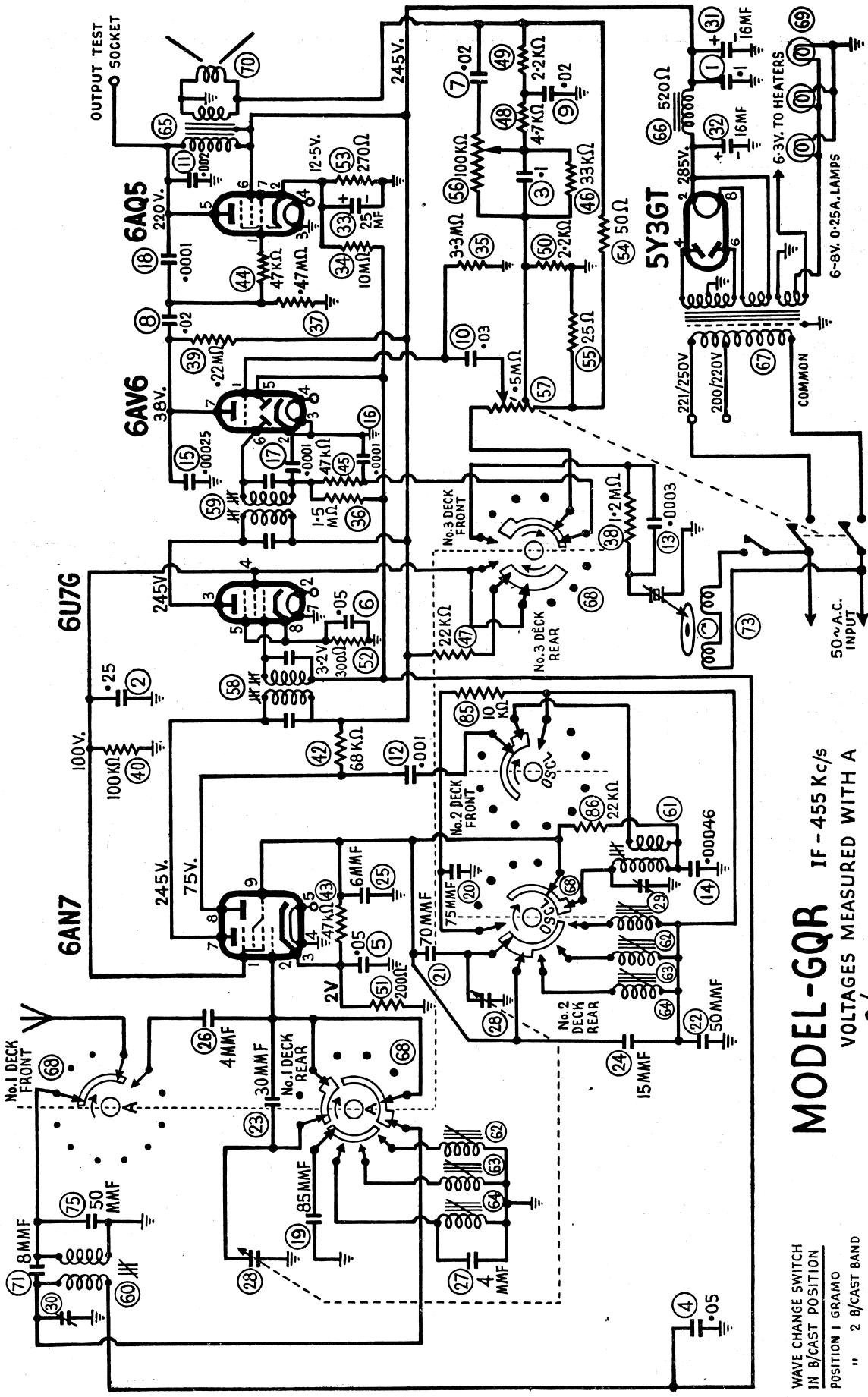
MAINS VOLTAGE ADJUSTMENT.--For 200-220 Volt Operation: The receiver chassis
has to be removed from the cabinet for this adjustment. SWITCH THE RECEIVER OFF
AND DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET. Remove
chassis from cabinet as detailed on page 2. The AC. junction strip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

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

<u>6AN7 Valve</u>	<u>6AE8 Valve</u>
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

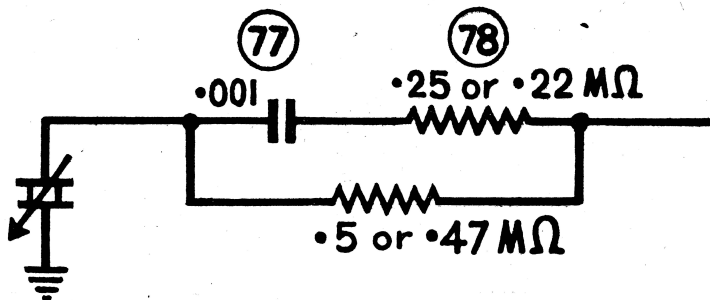


MODEL-GQR IF - 455 Kc/s
 VOLTAGES MEASURED WITH A
 1000Ω/VOLT VOLTMETER 230 VOLT
 INPUT TO 221-250 VOLT PRI. TAP.

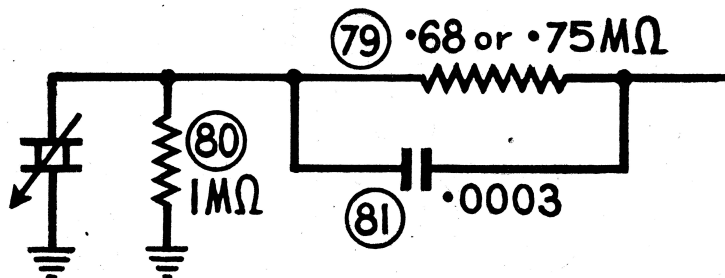
WAVE CHANGE SWITCH
 IN B/CAST POSITION
 POSITION 1 GRAMO
 " 2 8/CAST BAND
 " 3 19 METRE BAND
 " 4 25 METRE BAND
 " 5 31 METRE BAND

RECORD CHANGER PICK-UP ATTENUATION CIRCUITS

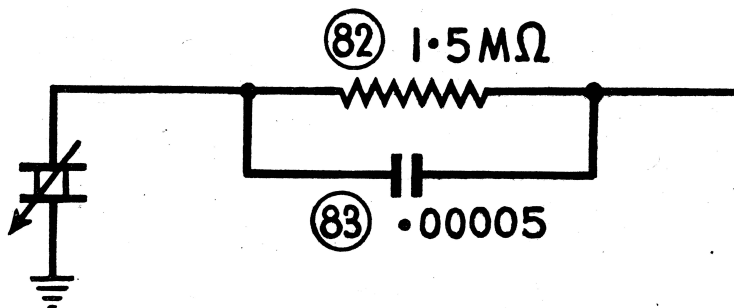
GARRARD-RC72A
GARRARD-RC75A
COLLARO-3RC521



BSR-MONARCH



COLLARO-3RC531
1st 250 RECEIVERS



COLLARO-3RC531 FUTURE PRODUCTION-AS SHOWN BY CIRCUIT DIAGRAM ON PAGE 4.

Circuit No.	Description.	Tol. ±	Rating	Part No.
1.	.1 MFD Paper Condenser.	20%	400V.DCW.	PC103
2.	.25 MFD Paper Condenser.	20%	400V.DCW.	PC128
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.	1MMFD	1000VT.	PC810
24.	15 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC811
25.	6 MMFD Ceramicon Condenser.	+ 1MMFD-0	500V.DCW.	PC831
26.	4 MMFD 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% 525 PV. }			
32.	16 MFD E'lytic. Cond. Tol. ± 20% 525 PV. }			
33.	25 MFD E'lytic. Cond. Tol. ± 20% 40 PV. }			
			Combination type.	PC760
34.	10 Megohm Carbon Resistor.	10%	½ W.	R1062
35.	3.3 Megohm Carbon Resistor.	10%	½ W.	R3352
36.	1.5 Megohm Carbon Resistor.	10%	½ W.	R1552
37.	.47 Megohm Carbon Resistor.	10%	½ W.	R4742
38.	1.2 Megohm Carbon Resistor.	10%	½ W.	R1252
39.	.22 Megohm Carbon Resistor.	10%	½ W.	R2242
40.	100,000 ohm Carbon Resistor.	10%	1 W.	Z1042
41.				
42.	68,000 ohm Carbon Resistor.	10%	½ W.	R6832
43.	47,000 ohm Carbon Resistor.	10%	½ W.	R4732
44.	47,000 ohm Carbon Resistor.	10%	½ W.	R4732
45.	47,000 ohm Carbon Resistor.	10%	½ W.	R4732
46.	33,000 ohm Carbon Resistor.	10%	½ W.	R3332
47.	22,000 ohm Carbon Resistor.	10%	1 W.	Z2232
48.	4,700 ohm Carbon Resistor.	10%	½ W.	R4722
49.	2,200 ohm Carbon Resistor.	10%	½ W.	R2222
50.	2,200 ohm Carbon Resistor.	10%	½ W.	R2222
51.	200 ohm Carbon Resistor.	10%	½ W.	PR176
52.	300 ohm Carbon Resistor.	10%	½ W.	PR258
53.	270 ohm Carbon Resistor.	10%	1 W.	Z2712
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%		PR720
57.	500,000 ohm. Pot. tapped at 40,000 ohms and with DP.ST. switch attached.	20%		PR679
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 DC. resist.			PT806
67.	Power Transformer, 200-250 Volt 50 cycle mains.			PT807
	Power Transformer, 200-260 Volt 40 cycle mains.			PT809
68.	Gramo-Wave Change Switch.			S179
69.	Dial Lamp, 6.3V. 0.32A. Min. Screw Base, T3¼ Bulb.			M304
70.	12" Permag. Speaker, type 12M magnet.			K172
71.	8MMFD (Part of antenna coil circuit No. 60).			PC832
72.				
73.	Record Changer - Garrard type RC72A, 3 speed, Turnover type crystal cartridge 200-250V. 50 cycle operation Replacement turnover type head (includes needles). 40 cycle Drive Bush.			M283 229/524 228/524

Record Changer - Collaro type 3RC521, 3 speed, Turnover type crystal cartridge, 200-250V. 50 cycle operation.				M292
Replacement turnover type head (includes needles).				230/524
40 Cycle Drive Bush.				231/524
Special Grub-Screw for 40 cycle drive bush 231/524.				194/415
Record Changer - Garrard type RC75A, 3 speed, turnover type head, crystal cartridge, 200-250V. 50 cycle operation.				M301
Replacement turnover type head (includes needles).				315/524
40 Cycle drive bush.				324/524
Record Changer - Collaro type 3RC531, Turnover type head, 'Studio', crystal cartridge, 200-250V. 50 cycle operation.				M308
Replacement turnover type head (includes needles).				236/524
40 cycle drive bush.				237/524
Record Changer - B.S.R. 'Monarch', 3 speed, Turnover type head, crystal cartridge, 200-250V. 50 cycle operation.				M303
Replacement TC2 crystal cartridge.				266/524
Long-playing needle for microgroove recordings.				265/524
Standard needle for 78 RPM recordings.				264/524
74.				
75. .00005 MFD Mica Condenser.		10%	1000VT.	PC141
76.				
77. .001 MFD Mica Condenser		10%	1000VT.	PC108
78. {.25 Megohm Carbon Resistor or		10%	½ W.	PR249
{.22 Megohm Carbon Resistor		10%	½ W.	R2242
79. {.68 Megohm Carbon Resistor or		10%	½ W.	R6842
{.75 Megohm Carbon Resistor		10%	½ W.	PR267
80. 1 Megohm Carbon Resistor.		10%	½ W.	R1052
81. .0003 MFD Mica Condenser		10%	1000VT.	PC212
82. 1.5 Megohm Carbon Resistor		10%	½ W.	R1552
83. .00005 MFD Mica Condenser		10%	1000VT.	PC141
84.				
85. 10,000 ohm Carbon Resistor		10%	½ W.	R1032
86. 22,000 ohm Carbon Resistor		10%	½ W.	R2232
7 Pin Socket	A104/58	Shield Earth Contact - 6U7G		22/30C
8 Pin Socket	PM532	Lamp Socket Assy. (3)		A105/661
9 Pin Socket	279/250	Lamp Socket Assy. / - W/C.		A110/698
Dial Pulley ¾" dia.	17/87	Lamp Socket Assy. - Cab.		A128/30C
Pulley Stud	18/87	Dial Drum		A102/617
Brass Bush Gang Mtg.	93/53-1	Dial Reading		32/779-1
Rubber Grommet Gang Mtg.	64/30A	Tuning Spindle Assy.		All6/698-1
Clip - Osci. Coil	6/622	Valve Shield - 6AV6		38/635
Clip - IF Trans.	7/670	Dial Pointer Assy.		A102/798
Pulley ⅝" dia. - wood	13/613	Cab. Hinge Assy.		A107/779
Spindle Bearing Spring on switch spindle	24/754-1	Cab. Draw Brackets		13/779
Switch Coupling Crank	8/627	Cab. Back Mt. Clips		91/754
Astor - Transfer	274/250	Cab. Grille		22/779
Screw ⅝" x No. 6 Rd. Hd.	46/560-28	AC. Junction Block		297/250
Screw ¼" x 5/32" Rd. Hd.	16/560-4	Speaker Socket		389/30C
Cabinet Dome Casters	317/250	Speaker Plug		336/30C
Cab. Receiver Section Balance Spring	30/789	Indicator Bezel - Clear		27/688-3
Spring Anchor Plate Assy.	A106/789	Indicator Bezel - Blue		27/688-4
Valve Shield - 6U7G	PM217	Indicator Bezel - Orange		27/688-5
		Indicator Bezel - Red		27/688-1
		Indicator Bezel - Green		27/688-2

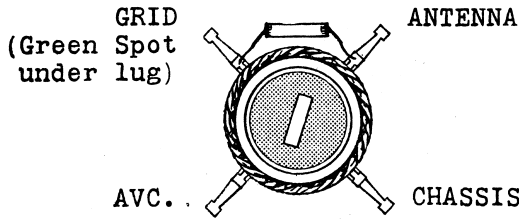
CABINETS

COLLARO CHANGERS	Walnut	Mahogany	Light Walnut	Birch	Sycamore	Maple
	246/221	246/221-1	246/221-2	246/221-9	246/221-10	246/221-11
GARRARD CHANGERS	246/221-3	246/221-4	246/221-5	-	-	-
B.S.R. CHANGER	246/221-6	246/221-7	246/221-8	-	-	-

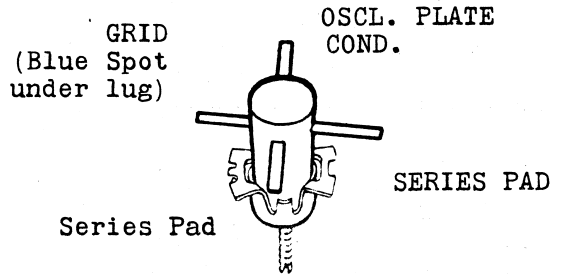
CONTROL KNOBS

	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

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.

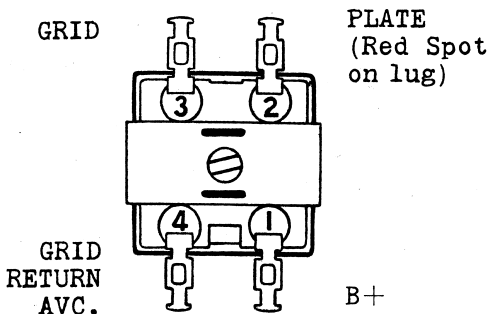
19, 25 AND 31 METRE OSCL. COIL

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

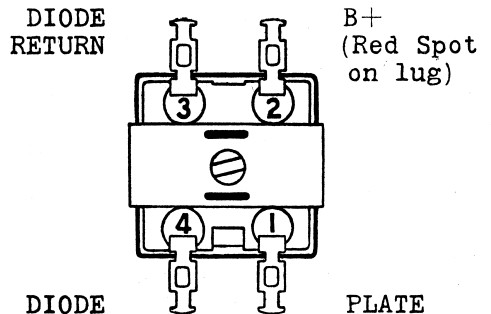
Lead from bottom lug (mounting end):-
OSCL. PLATE COND.

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. 6 ins., which includes about 8 ins. to spare for tying to tension spring.

Cord Part No. 34/754.

Tension Spring Part No. 27/87.

