



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

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

Bulletin: MS-1.

File: Receivers AC.

Date: 30/3/51.

Page 1.

TECHNICAL BULLETIN

MODEL—"MS"

GRAMO-RADIO COMBINATION.

An Automatic Record Changer and a 5 Tube 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 230-250V.

Power Consumption:

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

TUNING RANGES:---

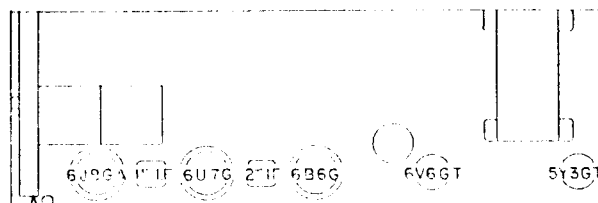
Broadcast Band, 535-1610 Kc/s.
19 Metre Band, 14.9-15.5 Mc/s. (Bandspread)
25 Metre Band, 11.6-12.1 Mc/s. (Bandspread)
31 Metre Band, 9.4-9.8 Mc/s. (Bandspread)

RECEIVER COVERAGE:

560.7-186.3 Metres.
20.13-19.29 Metres (approx.)
25.86-24.79 Metres (approx.)
31.91-31.63 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.



505/272

VALVE PLACEMENT DIAGRAM



TECHNICAL BULLETIN

SUBJECT

CIRCUIT MODIFICATION - MODEL "MS"

Two circuit components in the Model "MS" gramo-radio combination have been changed to eliminate a slight tendency to boom in the base response on gramo operation.

- A. Circuit No. 7 a .05MF. paper condenser, changed to a .01MF. paper condenser part No. PC140. This change applies for both crystal cartridge and magnetic type heads.
B. Circuit No. 67 a .5 megohm resistor, changed to a .25 megohm 1/2 watt resistor part No. PR249. This change applies only when using a crystal cartridge head.

The receiver chassis does not have to be removed from the cabinet for these alterations. The .5 megohm resistor is situated under the motor board and the .05MF. cond. is accessible when the top front of the cabinet is removed as the instructions on page 12 of Service Bulletin MS 1.

SUBJECT

MODIFIED CABINET MODEL "MS"

The Model "MS" modified cabinet has a wider dial reading covering the stations for all the Aust. States instead of a separate narrow dial reading for each State.

The modified cabinet has a moulded dial escutcheon instead of a wooden escutcheon and the new dial reading is printed on glass instead of polystyrene.

For replacement purposes the part numbers of the new parts used on the new cabinet are detailed below.

Table with 2 columns: DESCRIPTION and PART No. listing various components like Dial Escutcheon, Dial Reading, and Pointer Assy.

CABINET FOR USE WITH COLLARO 500 RECORD CHANGER

CABINET FOR USE WITH GARRARD RC70A RECORD CHANGER

Table with 2 columns: COLOUR and PART No. for Collaro 500, listing Walnut, Honey, Mahogany, and Golden Blonde.

Table with 2 columns: COLOUR and PART No. for Garrard RC70A, listing Walnut, Honey, Mahogany, and Golden Blonde.



TECHNICAL BULLETIN

SUBJECT-

**COLLARO MODEL RC511 RECORD CHANGER
MODEL "MS"**

The Collaro RC511 is a single speed (78RPM) record changer with a crystal cartridge head. The unit is designed to play a stack of eight 10 in. or eight 12 in. Australian records - sizes not intermixed. Operation is from 200-250 volts 50 cycle mains. The sapphire point needle is permanently fixed in the pick-up head and when replacement of the needle is required the whole pick-up head is replaced with a new head by simply unplugging the head from the pick-up arm and into its place plug the new head.

The new head part No. 196/524 which is specially designed for 78RPM recordings is identifiable by a green spot in the recessed hole on top of the head.

Detailed below is a list of the alterations required to the Model "MS" when using a Collaro RC511 changer with a crystal cartridge head in place of the Collaro RC500 or Garrard RC70A changers with crystal cartridge heads.

- A. Circuit No. 37 a 60K ohm resistor, changed to a 30K. ohm $\frac{1}{2}$ watt resistor part No. PR151.
- B. Circuit No. 7 a .01MF. paper cond. (changed from .05 to .01MF. by Service Bulletin MS-3) is to be made a .02 MF paper cond. part No. PC111.
- C. Delete circuit No. 68 a .25 megohm resistor.
- D. Delete circuit No. 67 a .25 megohm resistor (changed from .5 megohm to .25 megohm by Service Bulletin MS-3).
- E. A .5 megohm $\frac{1}{2}$ watt resistor part No. PR245 and a .0005 MF. mica cond. part No. PC144 are wired in parallel and connected in the active lead of the pick-up. These parts must be wired on the grammo-radio change over switch. A 2 ft. 9 in. shielded lead of 10/.010" part No. WML is connected from these parts to the pick-up junction strip beneath the motor board.
- F. A modification is required to the motor board cut-out.
- G. Cabinets with the revised cut-out are detailed below.

<u>Cabinet colour</u>	<u>Part No.</u>
Walnut	219/221-5
Honey	219/221-6
Mahogany	219/221-7
Honey Blonde	219/221-8

ALIGNMENT INSTRUCTIONS — MODEL "MS".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. 230-250V. primary tap.

Equipment:—

Signal Generator.
 Output Meter.
 Mica Capacitor: 0.01 MF.
 Dummy Antenna: 200MMF. Mica capacitor.
 Dummy Antenna: 400 ohm. non-inductive resistor.
 Alignment Tools: Type M195 and PM581.

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 tube.	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid cap on tube. Peak 2nd IF. trans. pri. and sec. for max. output.
2.	To control grid of 6J8GA tube.	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Gang plates fully out of mesh. Leave grid cap on tube. 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 oscil. coil. ind. trim. (iron core) for max. output.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
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.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
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.			

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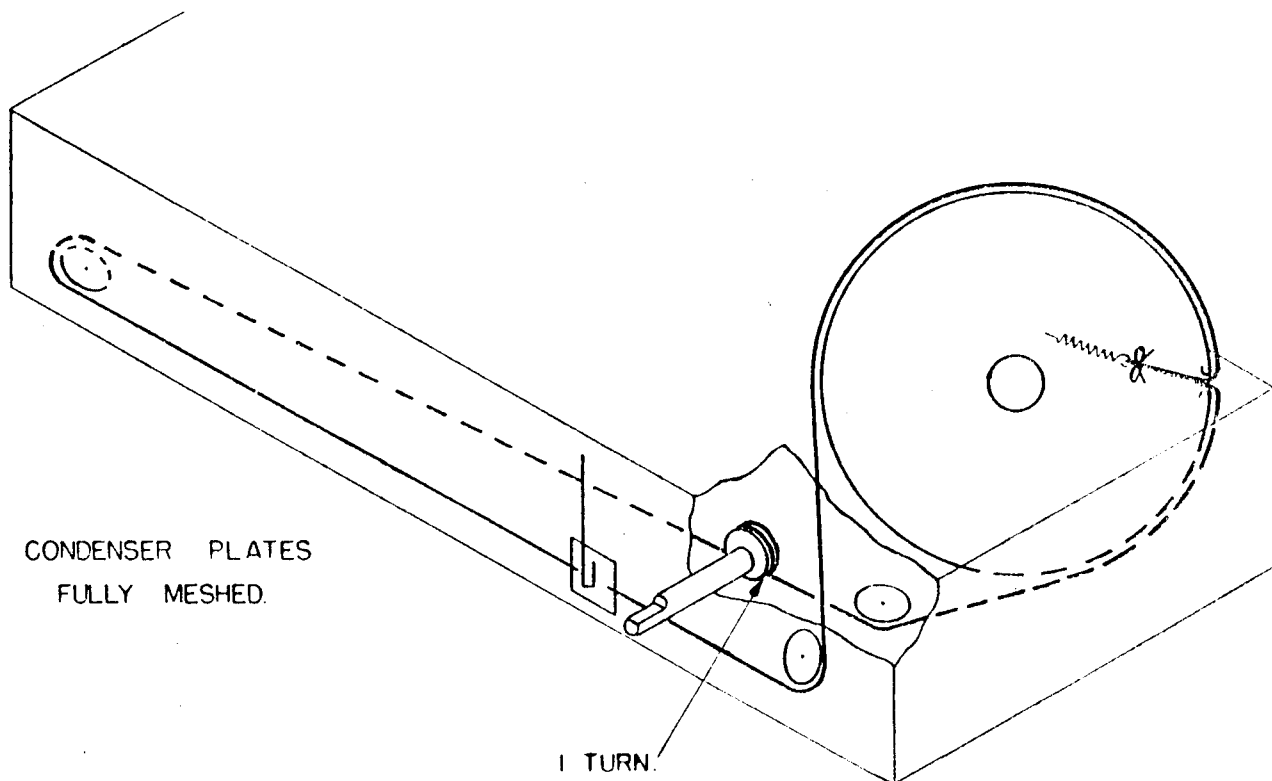
Subject:

CORDING OF DIAL DRIVE.

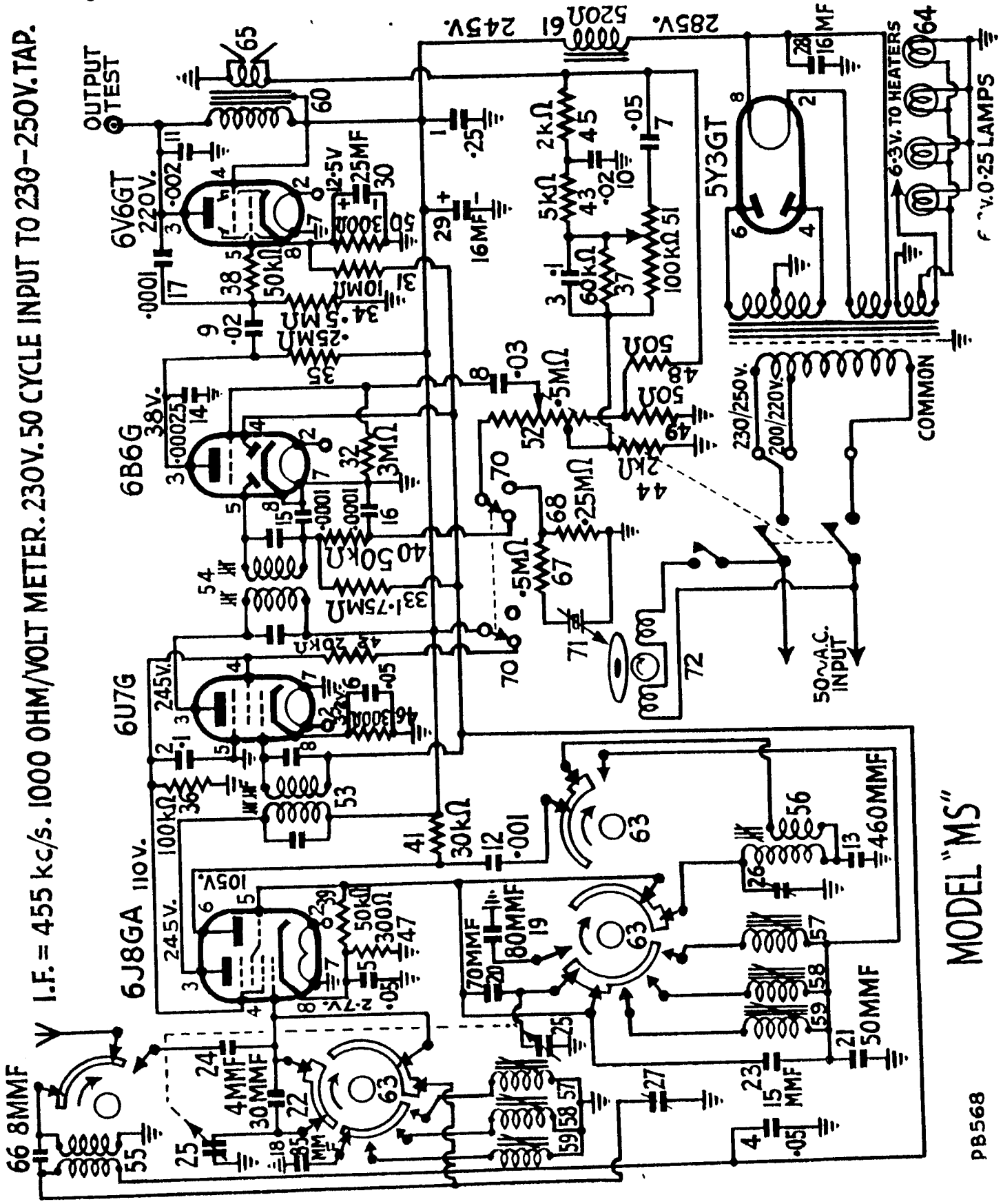
Length of cord required is 5 ft. 6 ins. which includes about 6 ins. to spare for tying to the tension spring.

Cord Part No. 7/282.

Tension Spring Part No. 21/698.



I.F. = 455 kc/s. 1000 OHM/VOLT METER. 230V. 50 CYCLE INPUT TO 230-250V. TAP.



MODEL "MS"

PB568

Bulletin: MS-1.

File: Receivers AC.

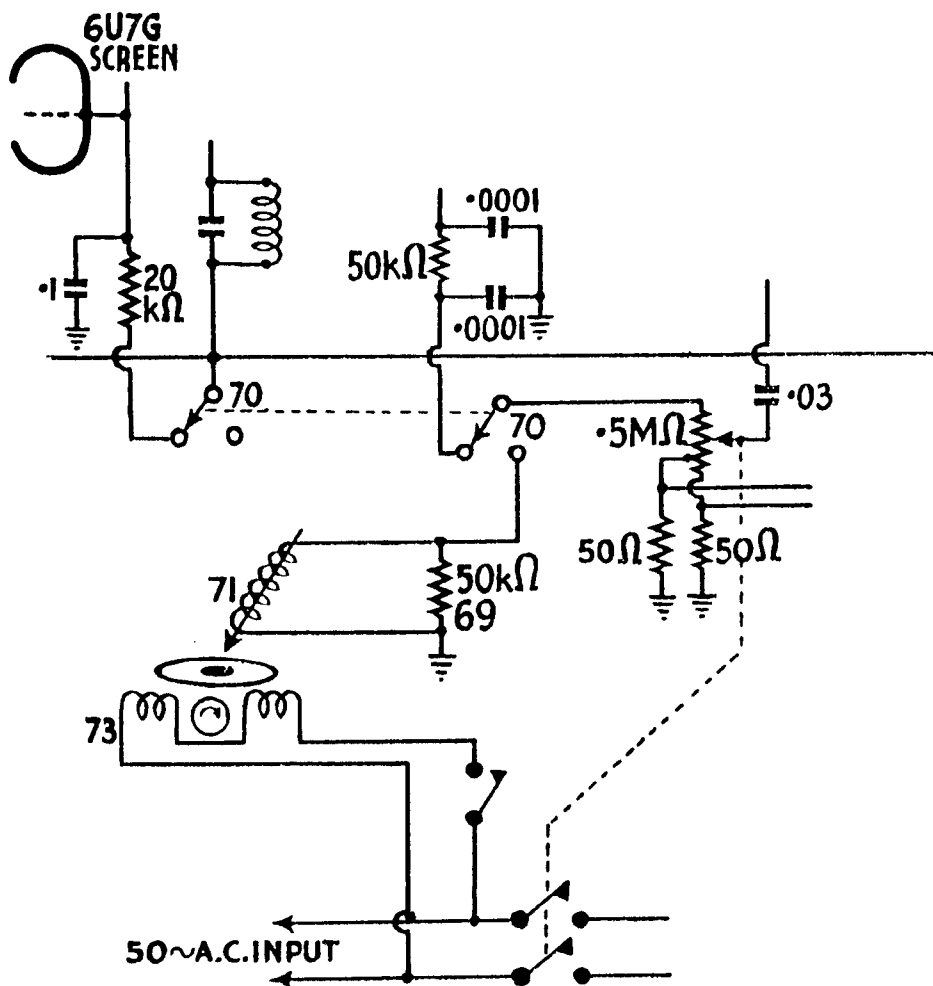
Date: 30/3/51.

Subject:

PICK-UP ATTENUATION CIRCUIT.

The circuit shown on Page 6 is used when the pick-up has a crystal cartridge.

The circuit shown below is used when the pick-up has a magnetic type head.



PB569

NOTE:—Circuit No. 49 a 50 ohm resistor has been changed to a 25 ohm resistor in both circuits.

Component Parts List — Model "MS".

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.	.05 MFD Paper Condenser.	20%	200V.DCW.	PC102
8.	.03 MFD Paper Condenser.	20%	200V.DCW.	PC303
9.	.02 MFD Paper Condenser.	20%	400V.DCW.	PC111
10.	.02 MFD Paper Condenser.	20%	400V.DCW.	PC111
11.	.002 MFD Paper Condenser.	20%	600V.DCW.	PC112
12.	.001 MFD Mica Condenser.	10%	1000VT.	PC108
13.	.00046 MFD Mica Condenser.	2½%	1000VT.	PC728
14.	.00025 MFD Mica Condenser.	10%	1000VT.	PC126
15.	.0001 MFD Mica Condenser.	10%	1000VT.	PC110
16.	.0001 MFD Mica Condenser.	10%	1000VT.	PC110
17.	.0001 MFD Mica Condenser.	10%	1000VT.	PC110
18.	85 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC809
19.	80 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC798
20.	70 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC799
21.	50 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC801
22.	30 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC810
23.	15 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC811
24.	4 MMFD Ceramicon Condenser.	+1MMFD-0	500V.DCW.	PC830
25.	2 Gang Varb. Condenser.			PC636
26.	0-30 MMFD Trimmer Cond. Wire Wound.			PC663
27.	1.5-18 MMFD Trimmer Condenser.			PC250
28.	16 MFD E'lytic. Cond. Tol.± 20% 525PV. }			
29.	16 MFD E'lytic. Cond. Tol.± 20% 525PV. }			
30.	25 MFD E'lytic. Cond. Tol.± 20% 40PV. }			
			Combination type.	PC760
31.	10 Megohm Carbon Resistor.	10%	1 W.	PR236
32.	3 Megohm Carbon Resistor.	10%	½ W.	PR282
33.	1.75 Megohm Carbon Resistor.	10%	½ W.	PR248
34.	.5 Megohm Carbon Resistor.	10%	½ W.	PR245
35.	.25 Megohm Carbon Resistor.	10%	1 W.	PR496
36.	100,000 ohm Carbon Resistor.	10%	1 W.	PR165
37.	60,000 ohm Carbon Resistor.	10%	½ W.	PR125
38.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
39.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
40.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
41.	30,000 ohm Carbon Resistor.	10%	1 W.	PR156
42.	20,000 ohm Carbon Resistor.	10%	1 W.	PR171
43.	5,000 ohm Carbon Resistor.	10%	½ W.	PR250
44.	2,000 ohm Carbon Resistor.	10%	½ W.	PR253
45.	2,000 ohm Carbon Resistor.	10%	½ W.	PR253
46.	300 ohm Carbon Resistor.	10%	½ W.	PR258
47.	300 ohm Carbon Resistor.	10%	½ W.	PR258
48.	50 ohm Wire Wound Resistor.	10%	½ W.	PR280
49.	25 ohm Wire Wound Resistor.	10%	½ W.	PR281

COMPONENT PARTS LIST-MODEL "MS"--Contd.

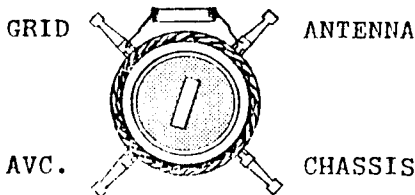
Circuit No.	Description.	Tol.±	Rating.	Part No.
50.	300 ohm Wire Wound Resistor.	10%	1 W.	PR122
51.	100,000 ohm Potentiometer.	20%		PR699
52.	500,000 ohm Pot. tapped at 40,000 ohms and with DP.ST. switch attached.	20%		PR662
53.	IF Transformer.			PT869
54.	IF. Transformer.			PT869
55.	Antenna Trans. B/cast. (iron cored).			PT905
56.	Oscil. Coil B/cast.			PT860
57.	19 Metre Bandsread Coil (blue spot on coil).			PT914
58.	25 Metre Bandsread Coil (white spot on coil).			PT913
59.	31 Metre Bandsread Coil (red spot on coil).			PT912
60.	Speaker Input Trans. 5,000 ohms Primary Imped.			PT799
61.	Choke, 14H, 60 Ma.			PT806
62.	Power Transformer, 200-250 Volt 50 cycle mains.			PT807
	Power Transformer, 200-260 Volt 40 cycle mains.			PT809
63.	Wave change switch.			S169
64.	Dial Lamp, 6.3V. 0.25A. Min. Screw Base, T 3 $\frac{1}{2}$ Bulb.			PM678
65.	{ 12" Permag. Speaker, type 12M magnet			K172
	{ 12" Permag. Speaker, type 12K magnet			K172 1
66.	8MMFD (Part of antenna coil circuit No. 55).			FC825
67.	.5 Megohm Carbon Resistor.	10%	$\frac{1}{2}$ W.	PR245
68.	.25 Megohm Carbon Resistor.	10%	$\frac{1}{2}$ W.	PR249
69.	50,000 ohm Carbon Resistor.	10%	$\frac{1}{2}$ W.	PR160
70.	Change-over switch gramo-radio.			S176
71.	Sapphire Point Needle.			M167
72.	Record Changer--Collaro "500" with crystal cartridge 200-250 volt 50 cycle operation			M216
	Replacement crystal cartridge			71/524
	Drive Bush for 40 cycle operation			84/524
	Record Changer- Collaro "500" with crystal cartridge 200-250 volt 40 cycle operation			M248
	Replacement crystal cartridge			71/524
	Record Changer--Garrard RC70A with Crystal cartridge 200-250 volt 50 cycle operation			M218
	Replacement crystal cartridge			71/524
	Drive bush for 40 cycle operation			75/524
	Record Changer--Garrard RC70A with crystal cartridge 200-250 volt 40 cycle operation			M241
	Replacement crystal cartridge			71/524
73.	Record Changer--Collaro "500" with magnetic head 200-250 volt 50 cycle operation			M249
	Drive bush for 40 cycle operation			84/524
	Record Changer--Garrard RC70A with magnetic head 200-250 volt 50 cycle operation			M240
	Drive bush for 40 cycle operation			75/524
	Tube Shield.			PM217
	Antenna Terminal.			PM306
	8 Pin Socket.			PM532
	Tube Type 6J8GA.			
	Tube Type 6U7G.			
	Tube Type 6B6G.			
	Tube Type 6V6GT.			
	Tube Type 5Y3GT.			

Description	Part No.	Description	Part No.
Spindle, tone and W/C extension.	3/758-1.	Dial Background Ass'y.	A101/758.
Control Knob—front.	167/81.	Control knob—side.	178/81.
Knob—gramo radio/change-over.	4/310-1.	Control knob—clips.	161/81.
Dial Retaining Cup.	3/683/1.	Cabinet Back.	11/760.
Dial Pointer Ass'y.	A103/758.	Dial Lamp Socket Ass'y.	A105/661.
Socket & Indicator Lamp Arm Ass'y.	A110/698.	Indicator Light Button—blue.	27/688-4.
Indicator Light Button—red.	27/688-1.	Indicator Light Button—green.	27/688-2.
Indicator Light Button—clear.	27/688-3.	Dial Reading—N.S.W.	44/698-2.
Dial Reading—Vic.—TAS.	44/698-3.	Dial Reading—QLD.	44/698-4.
Dial Reading—S.A.—W.A.	44/698-5.	Felt Washers for knobs.	7/758.
Screw (4) speaker mounting.	46/560-10.	Screw (8) cabinet back 3/8" x 5/32" Whit. C'sk. Hd.	17/560-10.
Screw (4) chassis to cabinet bracket.	16/560-8.	Coil Mount Clip.	6/622.
Clip for IF. Trans. mount.	7/670.	Pulley—large.	13/613.
Pulley—small.	17/87.	Dial Drum.	A104/698.
Tuning Spindle.	6/698.	Nut for Tuning Spindle.	41/161.
"C" Washer for Tuning Spindle.	19/57-1.	Bush for Tuning Spindle.	4/698.
Speaker lead clip term strip ass'y.	A105/698.	3 Lug Terminal Strip.	A103/509.

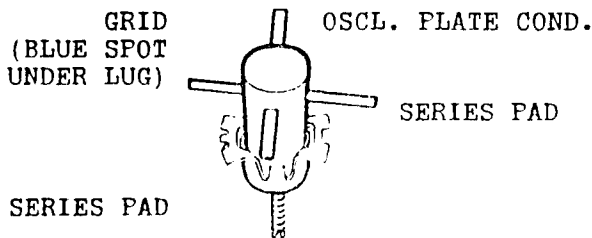
Cabinet Parts.

Cabinet—walnut for Garrard RC70A. record changer.	212/221-1.	Cabinet—mahogany for Garrard RC70A. record changer.	212/221-3.
Cabinet—honey for Garrard RC70A. record changer.	212/221-2.	Cabinet—golden blonde for Garrard RC70A. record changer.	212/221-4.
Cabinet—walnut for Collaro "500" record changer.	212/221-5.	Cabinet—mahogany for Collaro "500" record changer.	212/221-7.
Cabinet—honey for Collaro "500" record changer.	212/221-6.	Cabinet—golden blonde for Collaro "500" record changer.	212/221-8.
Front Panel Clips.	1/760.	Front Panel Brackets.	2/760.
Handles.	213/221.	Handle Mount Bush.	3/760-1.
Basket Weave—speaker grille.	5/760	Astor Swan Badge.	274/250.

ANTENNA TRANS. B/C. (IRON CORED)



OSCL. COIL B/C.



19, 25 and 31 METRE ANT. TRANS.

19, 25 and 31 METRE OSCL. COIL

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

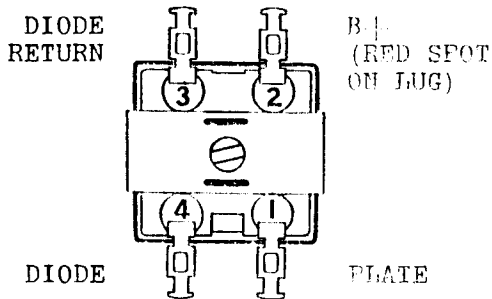
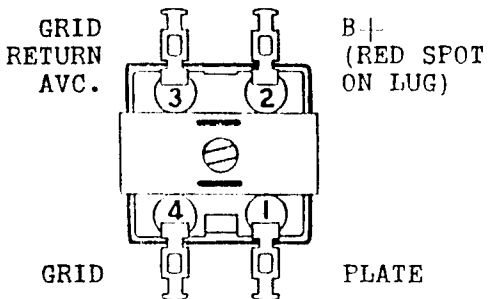
Lead from top lug (iron core end):—
GRID.

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

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

1st IF. TRANS.

2nd IF. TRANS.



Subject: 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 230V. and 250V., on the 230-250V. 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 230 volt tap and re-solder 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 grammo-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 AC. 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.