ECLIPSE RADIO PTY. LTD.

(A DIVISION OF ELECTRONIC INDUSTRIES LTD.)

11-21 STURT STREET, SOUTH MELBOURNE

TECHNICAL BULLETIN

MONARCH RADIO

Bulletin : "MR"—1 **File : Receivers A.C.** **Date : 27/3/50**

Subject:

Model "MR"
5 Tube Dual Wave Superheterodyne
Radio Phonograph with Automatic
Record Changing Unit

For Operation from:

200 – 250 Volt 50 cycle A.C. Mains

This Bulletin contains:

1. Technical Specifications
2. General Description
3. Transport
4. Operating Instructions
5. Alignment Procedure
6. Circuit Diagram
7. Voltage Table
8. Mains Voltage adjustment and 40 cycle operation
9. Component Parts List
10. Coil and I.F. Transformer Connections

TECHNICAL SPECIFICATIONS – Model "MR"

Tube Complement: Type 6J8G Converter
" 6U7G I.F. Amplifier
" 6B6G Diode Detector AVC 1st Audio
" 6V6GT Power Output Amplifier
" 5Y3GT Full Wave Rectifier

Intermediate Frequency: 455 Kc/s.

Tuning Range: Broadcast – 535–1,640 Kilocycles; 560–182.9 Metres
Shortwave – 5.8–18.5 Megacycles; 50 – 16 Metres

Calibration: Straight Line Frequency

Power Consumption: Radio Operation: 55 Watts (approx.)
Gramo Operation: 75 Watts (approx.)

GENERAL DESCRIPTION

The Model "MR" is a 5 tube dual wave Superheterodyne Radio-Phonograph receiver, designed for operation from the 200 – 250 volt 50 cycle A.C. mains and when suitable adjustments are made (see Page 5) from the 200 – 260 volt 40 cycle A.C. mains.

The receiver is housed in a cabinet of the type which reveals the dial, controls, and phonograph unit when the lid is raised. The position of the controls and method of operation is shown in the operating instructions herein.

Continuously variable tone control is obtained by use of selective inverse feedback which is applied to a tapping on the volume control, producing also tone compensation at low listening levels. Rotation of the tone control in an anti-clockwise direction produces bass lift, and when rotated in a clockwise direction, bass cut. The centre (wide-range) position is used for normal listening under good conditions.

Further explanation of the circuit other than is given by the list of tube functions and the circuit diagram itself seems unnecessary since usual good practice is followed throughout.

Early production receivers will use a Garrard type RC70A record changing unit, which will be replaced later by a Collaro type RC500. When the latter is used, no circuit changes are necessary. Separate supplementary bulletins will be issued to cover each of these record changing units.

TRANSPORT

Two transport screws, indicated on the diagram (page 4) hold the record changer rigid to the cabinet during transport. These are to be unscrewed and withdrawn when operating, and reinserted and screwed tight during transport.

OPERATING INSTRUCTIONS (Radio)

Radio-Phonograph Switch:

This switch is located on the panel of the receiver above the dial, and when pressed in the direction of the turntable (to the left) connects the equipment for Phonograph operation. Pressing of the switch to the right will cause the Radio to operate.

Tone Control:

Adjustment of this control gives the operator a choice of response from bass to treble, with wide range response of 50% rotation of the tone control knob from either the bass or treble end.

Volume Control Switch:

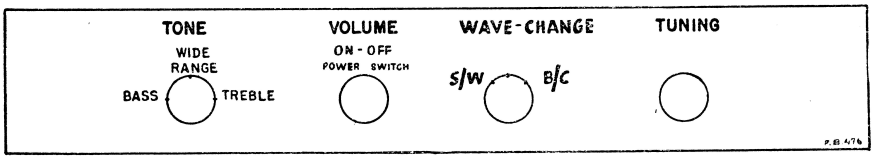
This control combines the functions of switching the receiver on or off and of varying the level of volume. Rotation in a clockwise direction switches the receiver on and increases the volume.

Wave Change Switch:

Anti-clockwise – S/wave Reception
Clockwise – B/cast Band Reception

Operating Instructions:

Connect mains cord to power point, switch on, and allow a few moments for the valves to heat up. Turn volume control about halfway to the right. Tune in the station desired to a position where the background noise is at a minimum; re-adjust volume and tone controls to suit. It is important that the station be accurately tuned, otherwise the tone will be impaired.



RECORD CHANGER OPERATING INSTRUCTIONS

Turn Gramo-Radio switch to Gramo position.

Controls: The volume and tone controls function on Gramo operation in exactly the same manner as on Radio operation.

1. NEEDLE: Rotate the pick-up head clockwise and securely fix a needle by means of the clamping screw. The needle may be of the permanent "sapphire" point type, but in any case should be of a type which will play at least 10 records without need of replacement. When a needle has been used once, slight flats develop on the needle point, therefore do not alter its position until replacing.

   To avoid damage to the changer mechanism, DO NOT touch the pick-up or restrain its movement by hand. When replacing the needle, first make sure the pick-up is resting on its rest pillar, and if not, hold the start-stop knob on the start position until the pick-up automatically rests on its pillar, then quickly release the knob.

2. LOADING RECORDS ON SPINDLE: Place the record spindle in position, the sloping section leaning towards the record clip. Set the record selector knob to the 10" or 12" position, according to the size of the records it is desired to play.

   Raise the record clip and place any number up to ten 10" or ten 12" records (sizes not mixed) on the record spindle, their lower edge resting on the record platform, then lower the record clip.

3. TO START: Move the front left-hand knob to "START". The motor will commence to run and the changer operate. When the last record has played, the changer will automatically switch off.

4. TO REJECT any record whilst playing, move the left-hand knob to "REJECT" position and release. This will reject the record being played and automatically bring down the next record for playing.

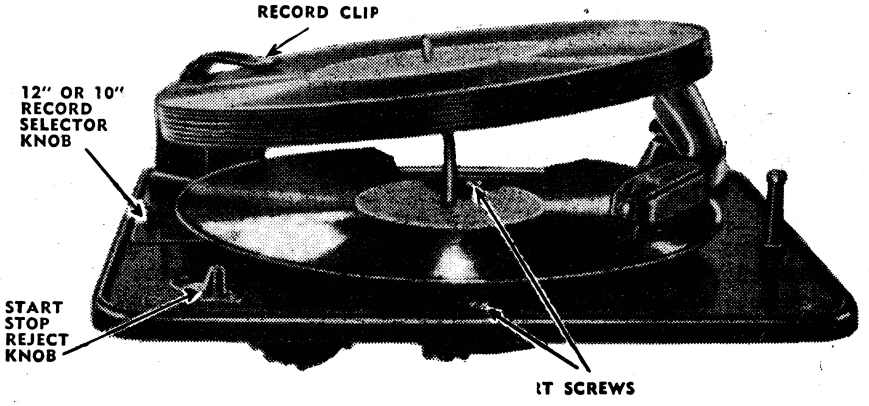
5. TO STOP the machine at any time, move the left-hand knob to the "STOP" position. If this is done while a record is playing, that record will be automatically rejected and the next record commenced when the changer is switched on again.

6. TO UNLOAD RECORDS: Raise the record clip and withdraw the record spindle.

7. TO REPEAT: If desired, one record may be repeated any number of times automatically by placing the record on the turntable, setting the selector knob to the size of the record and switching on with no records on the spindle and the record clip raised. When it is desired to stop playing the record, just lower the record clip and the changer will automatically switch off at the end of the record.

RECORDS: Do not use badly warped records or records with imperfect and badly worn centre holes; they may not drop and the pick-up would lower on the turntable felt; also, badly warped records will give trouble by slipping during playing.

Care should be taken in storing records to prevent contact with dirt and dust, which sets up abrasive action and causes rapid wear. Always brush records with a lint-free cloth or soft brush before playing.



ALIGNMENT PROCEDURE – Model "MR"

Equipment: Signal Generator
Output Meter
Alignment Tool. M195 and PM581
Mica Capacitor: .01MFD. (I.F.T. Alignment)
Dummy Antenna: 200 MMFD. Mica Capacitor
Dummy Antenna: 40 ohm Non-Inductive Resistor

Alignment Conditions: Load Impedance – 5,000 ohms
Output Level – 50 Milliwatts
Volume Control – Full on (clockwise)
Tone Control – Treble Tone Position

Dial Pointer Setting: Set the centre of the dial pointer on the end of travel mark on the dial calibration near 550 Kc/s. Condenser gang plates fully meshed.

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Alignment: Intermediate Frequency – 455 Kc/s.

Operation	Generator Connection	Frequency	Dummy Antenna	Instructions
		TURN WAVE CHANGE SWITCH TO BROADCAST POSITION		
1.	To control grid of 6U7G.	455 Mc/s.	.01MFD. mica capacitor in series with generator.	Leave grid cap on tube. Gang plates full out. Peak 2nd IF. trans. primary and secondary.
2.	To control grid of 6J8G tube.	455 Kc/s.	.01MFD. mica capacitor in series with generator.	Leave grid cap on tube. Gang plates full out. Peak 1st IF. trans. primary and secondary.
3.	To antenna terminal.	600 Kc/s.	200MMFD. mica capacitor in series with generator.	Turn gang and dial pointer to 600 Kc/s. Peak B/C. oscl. coil inductance trimmer (iron core) for max. output. Rock the cond. gang to and fro through the signal while adjusting.
4.	To antenna terminal.	1400 Kc/s.	200MMFD. mica capacitor in series with generator.	Turn gang and dial pointer to 1,400 Kc/s. Adjust B/C. oscl. coil trimmer for logging and peak B/C. antenna trans. trimmer for max. output.
5.	Repeat operations Nos. 3 and 4.			
		TURN WAVE CHANGE SWITCH TO SHORT-WAVE POSITION		
6.	To antenna terminal.	16 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn dial pointer and gang to 16 Mc/s. Adjust S/wave oscl. trimmer for logging and peak S/wave antenna trans. trimmer.
7.	To antenna terminal	7 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn gang and dial pointer to 7 Mc/s. and check tracking.

Adjustments for 40 Cycles Operation:

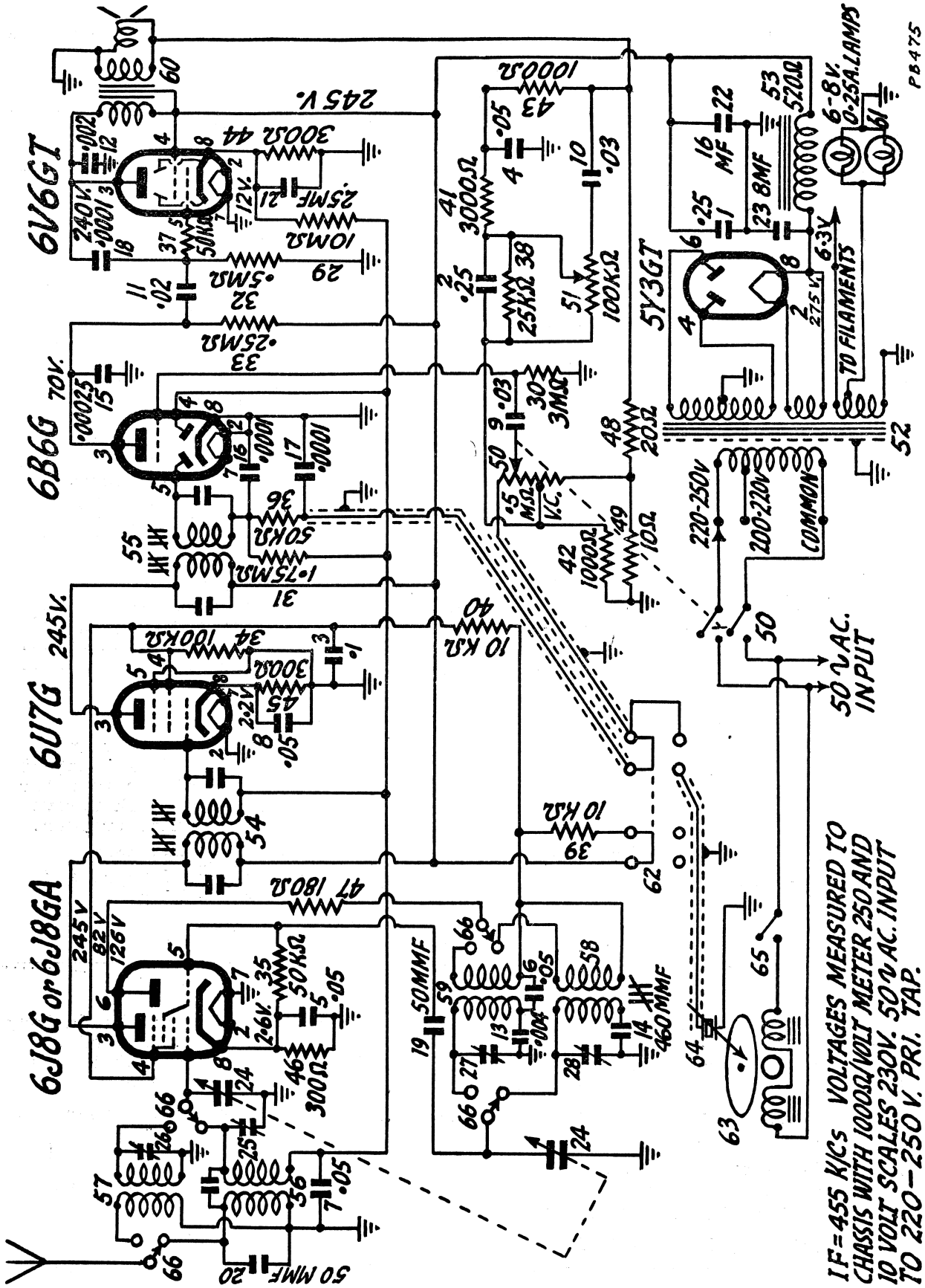
All receivers shipped to Western Australia are adjusted at the factory for operation from the 40 Cycle 260 Volt A.C. mains. If it is desired to modify a receiver which is adjusted for 50 Cycles operation so that it can be used in Western Australia, the following changes are to be made:

1. Replace the power transformer PT807 with 40 Cycle 260 Volt power transformer, Part No. PT809.

2. (a) Garrard, Type RC70A Record Changing Unit:
Replace the existing brass pulley on the motor driving spindle to pulley, Eclipse Part No. 75/524.

(b) Collaro, Type RC500 Record Changing Unit:
Replace the existing brass pulley on the motor driving spindle to pulley, Eclipse Part No. 70/524.

Subject: Circuit Diagram – Model "MR"



NOTE: 1. Component No. 2, which is shown as .25 mfd., should read .1 mfd.

2. Components 67, 68 and 69 have been added to the pick-up circuit. See circuit diagram elsewhere in this bulletin.

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Subject: Voltage Table – Model "MR"

Equipment: DC. Volt Meter: 1,000 ohm/volt meter with 0-10, 0-250, and 0-500 volt scales.

AC. Volt Meter: –0-10, 0-250 and 0-500 volt scales.

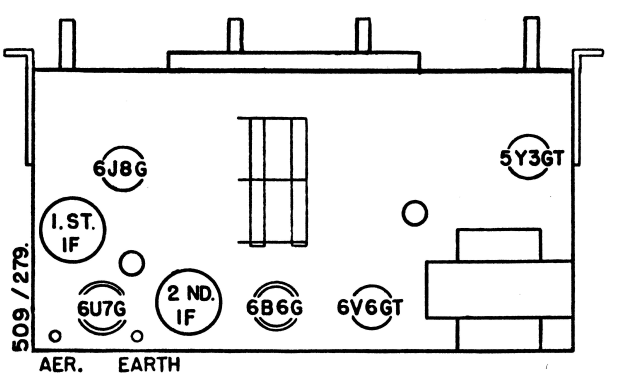
Conditions of test:

230 volts 50 cycle AC. input to 220-250 volt primary tap. Set tuned to 1,000 Kc/s., volume control full on, no signal. Heater voltages measured across heater contacts of tube sockets. All other voltages measured from tube socket contacts to chassis.

Tube	Heater	Plate	Screen	Cathode	Oscl. Plate
6J8GA	6.3V.	245V.	82V.	2.6V.	126V.
6U7G	6.3V.	245V.	82V.	2.2V.	
6B6G	6.3V.	70V.			
6V6GT	6.3V.	240V.	12V.		
5Y3GT	5V.	275/275V. RMS.	The initial surge voltage across the first electrolytic (circuit No. 32) is 370 volts dropping to normal operating value of 275 volts. DC. voltage drop across filter choke is 30 volts.		

Mains Voltage Adjustment for 200-220 Volt Operation: Disconnect the receiver from the A.C. mains socket.

Remove speaker plug from socket on side of chassis. Disconnect receivers A.C. mains lead from junction block on record changer. Withdraw pick-up leads from sockets on gramo-radio change-over switch. Unscrew and withdraw from top of cabinet four screws located around outside edge of board on which receiver is mounted. This board, with chassis attached to it, can now be lifted straight up out of the cabinet. Unsolder the A.C. mains lead from the volume control switch which is attached to the 220-250 volt tap (black lead from transformer primary) and resolder it to the 200-220V. tap (green lead from transformer primary). Refitting the cabinet is the exact reverse procedure adopted for removing it.



VALVE PLACEMENT DIAGRAM MODEL MR

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Subject: Component Parts List – Model "MR"

Circuit No.	Description	Tol.±	Rating	Part No.
1.	.25MFD. Paper Condenser	20%	400V.DCW.	PC128
2.	.1 MFD. Paper Condenser	20%	200V.DCW.	PC218
3.	.1 MFD. Paper Condenser	20%	400V.DCW.	PC103
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.	.05 MFD. Paper Condenser	20%	200V.DCW.	PC102
9.	.03 MFD. Paper Condenser	20%	200V.DCW.	PC303
10.	.03 MFD. Paper Condenser	20%	200V.DCW.	PC303
11.	.02 MFD. Paper Condenser	20%	200V.DCW.	PC111
12.	.002 MFD. Paper Condenser	20%	200V.DCW.	PC112
13.	.004 MFD. Mica Condenser	5%	1000VT.	PC299
14.	.00046 MFD. Mica Condenser	2½%	1000VT.	PC728
15.	.00025 MFD. Mica Condenser	10%	1000VT.	PC734
16.	.0001 MFD. Mica Condenser	10%	1000VT.	PC571
17.	.0001 MFD. Mica Condenser	10%	1000VT.	PC571
18.	.0001 MFD. Mica Condenser	10%	1000VT.	PC571
19.	.00005 MFD. Mica Condenser	10%	1000VT.	PC572
20.	.00005 MFD. Mica Condenser	10%	1000VT.	PC572
21.	25 MFD. E'lytic Condenser	20%	40PV.	PC318
22.	16 MFD. E'lytic Condenser	20%	525PV.	PC300
23.	8 MFD. E'lytic Condenser	20%	525PV.	PC313
24.	8 Gang Varb. Condenser			PC636
25.	1.5-18 MMFD. Trimmer B/C (Double Trimmer Assy.)			PC658
26.	3 - 55 MMFD. Trimmer S/W			
27.	0-30 MMFD. Wire Wound Trimmer S/W			PC663
28.	0-30 MMFD. Wire Wound Trimmer B/C			PC663
29.	10 Megohm Carbon Resistor	10%	1 Watt	PR236
30.	3 Megohm Carbon Resistor	10%	½ Watt	PR282
31.	1.75 Megohm Carbon Resistor	10%	½ Watt	PR248
32.	500,000 Ohm Carbon Resistor	10%	½ Watt	PR245
33.	250,000 Ohm Carbon Resistor	10%	1 Watt	PR496
34.	100,000 Ohm Carbon Resistor	10%	1 Watt	PR165
35.	50,000 Ohm Carbon Resistor	10%	½ Watt	PR160
36.	50,000 Ohm Carbon Resistor	10%	½ Watt	PR160
37.	50,000 Ohm Carbon Resistor	10%	½ Watt	PR160
38.	25,000 Ohm Carbon Resistor	10%	½ Watt	PR155
39.	(10,000 Ohm Carbon Resistor	10%	2 Watt	–
	(Consists of two 20,000 Ohm 1 Watt resistors in parallel.			Part No. PR171
40.	10,000 Ohm Carbon Resistor	10%	1 Watt	PR325
41.	3,000 Ohm Carbon Resistor	10%	½ Watt	PR185
42.	1,000 Ohm Carbon Resistor	10%	½ Watt	PR252
43.	1,000 Ohm Carbon Resistor	10%	½ Watt	PR252
44.	300 Ohm Wire Wound	10%	1 Watt	PR122
45.	300 Ohm Wire Wound	10%	½ Watt	PR258
46.	300 Ohm Wire Wound	10%	½ Watt	PR258

Component Parts List - Model "MR" - Contd.

Circuit No.	Description	Tol.±	Rating	Part No.
47.	180 Ohm Wire Wound	10%	½ Watt	PR639
48.	20 Ohm Wire Wound	10%	½ Watt	PR231
49.	10 Ohm Wire Wound	10%	½ Watt	PR553
50.	.5 Megohm Carbon Pot. tapped at 40,000 Ohms DP.ST. switch attached to rear of pot.			PR662
51.	100,000 Ohm Carbon Potentiometer			PR663
52.	(Power Transformer 200-250 Volt 50 cycle operation			PT807
	(Power Transformer 200-260 Volt 40 cycle operation			PT809
53.	Choke 14H. 60 Ma. 520 Ohms			PT806
54.	1st IF. Transformer			PT869
55.	2nd IF. Transformer			PT869
56.	Antenna Transformer B/cast			PT381
57.	Antenna Transformer S/wave			PT463
58.	Oscl. Coil B/cast			PT860
59.	Oscl. Coil S/wave			PT464
60.	12" Permag. Speaker with 5,000 Ohms Imped. Input Trans. Attached			K137
61.	Dial Lamp, Min. Screw Base 6-8V. 0.25A			M145
62.	Gramo-Radio Change-over Switch DP.ST. 8 Lug			PM546
63.	Record Changer Unit - Complete		Garrard RC70	M218
			Collaro RC500	M216
64.	Sapphire Point Needle			M167
65.	Record Changer ON/OFF Switch - Part of Motor Unit			-
66.	Wave Change Switch			PM635
67.	.0005 mfd. Mica Condenser	10%	1000VT.	PC562
68.	250,000 ohm Carbon Resistor	10%	½ Watt	PR249
69.	250,000 ohm Carbon Resistor	10%	½ Watt	PR249

8 Pin Tube Socket	PM532	Tube Shield	PM217
Speaker Socket	262/250	Tube Shield Earth Contact	22/30C
Speaker Plug	261/250	Press Down Type Terminal	PM306
		Cabinet Assy.	204/221
Dial Reading	4/696	Cabinet Lid Support	60/245
Dial Pointer	A111/407	Control Knobs	77/81
Dial Drum	A102/617	Control Knob Felt Washer	6/633
Dial Back Assy.	A110/407-2	Control Knob Spring	17/81
Grommet-Cond. Mt.	64/30A	L.H. Dial Lamp Socket	A128/30C
Dial Cord Spring	27/87	R.H. Dial Lamp Socket	A129/30C
Dial Cord 62"	7/282	Needle Cup	42/245
Dial Pulley	17/87	Tuning Spindle Assy.	A109/295
Dial Pulley Stud	18/87	Diffuser Glass	27/407
Mains Terminal Strip	A101/30C-5		
IF. Trans. Mount Clip	7/670		
Operating Instructions - Receiver			155/278
Operating Instructions - Collaro RC500 Record Changer			563/279
Operating Instructions - Garrard RC70 Record Changer			545/279

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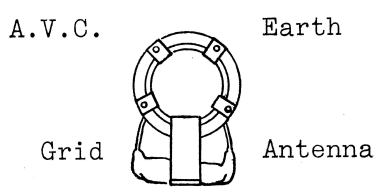
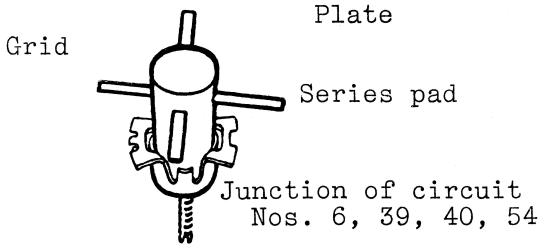
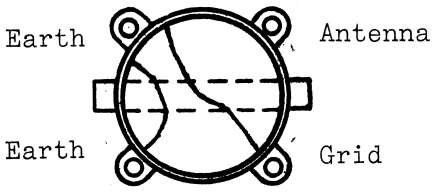
Subject: Coil and IF. Transformer Connections – Model "MR"



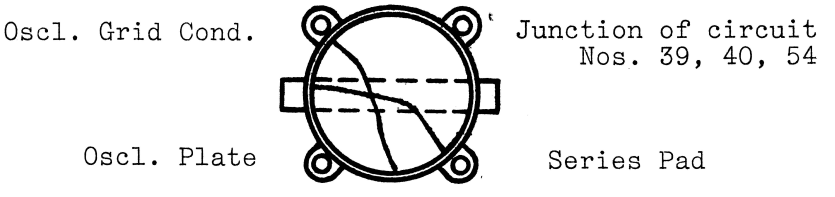
ANT. TRANS. BROADCAST



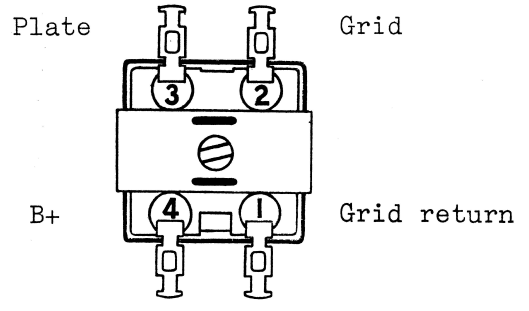
OSCL. COIL BROADCAST



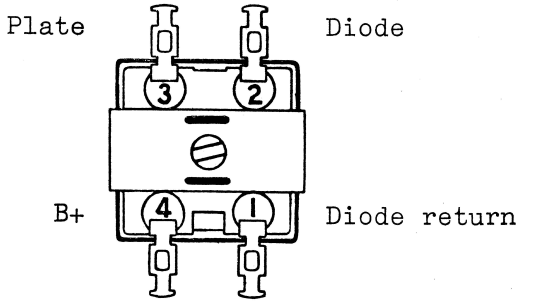
ANT. TRANS. SHORT WAVE



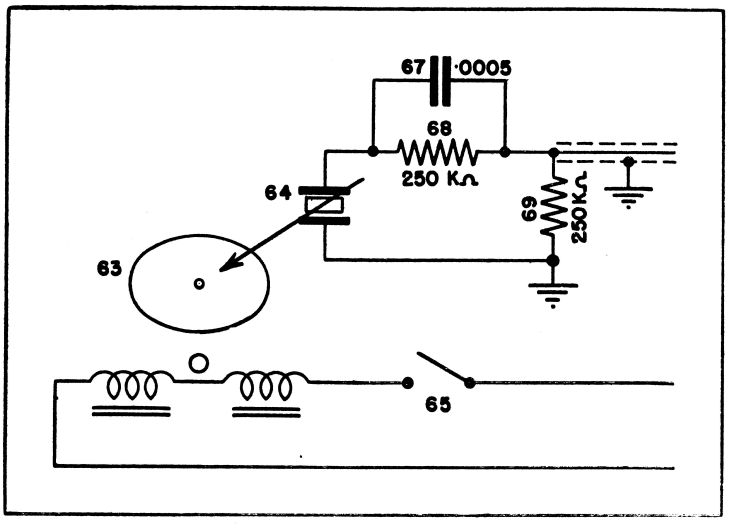
OSCL. COIL SHORT WAVE



1st IF. TRANS.



2nd IF. TRANS.



Circuit Diagram for Pick–up Connection.