RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.
TECHNICAL BULLETIN

BULLETIN NR-1.
File: Receivers Vibrator.
Date: 30-3-51.
Page: 1.

# MODEL—"NR."

## 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:**

A 32 Volt DC. Supply.

**Current Consumption:**

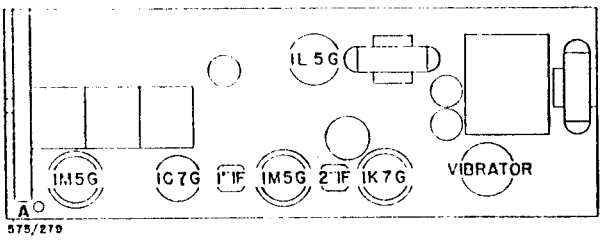
Radio Operation: 0.75 Amp. (includes four 6.3V, 0.25 amp. lamps Part No. PM 678 all wired in series).

Gramo Operation: 1.25 Amps (includes four dial lamps as above).

| Tuning Ranges:— | | Receiver Coverage:— |
|---|---|---|
| Broadcast Band: | 535-1610 Kc/s. | 560.7-186.33 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) | 31.91-31.63 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. Instruction for Removing Chassis from Cabinet.




VALVE PLACEMENT DIAGRAM

# ALIGNMENT INSTRUCTIONS -- MODEL "NR".

**Alignment Conditions:—**

Load Impedance: 15,000 ohms.
Output Level: 50 Milliwatts.
Volume Control: Max. Vol. (fully clockwise).
Tone Control: Treble position.
Intermediate Freq.: 455 Kc/s.
D.C. Supply: 32 volt DC. mains.

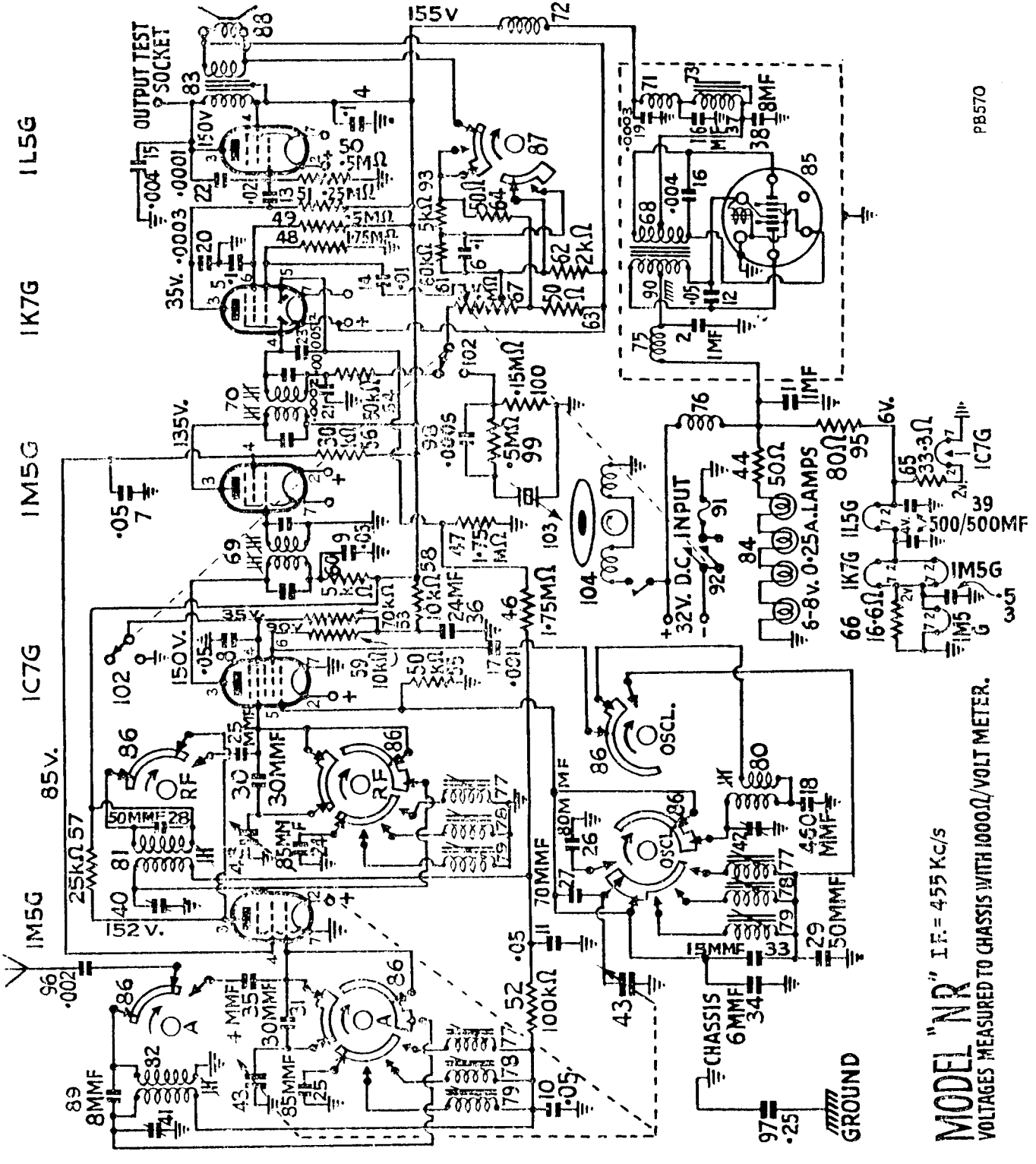
**Equipment:—**

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

It is not necessary to remove the chassis from the cabinet to realign the receiver. 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 1M5G IF tube. | 455 Kc/s | 0.01MF. Mica capacitor in series with generator. | Turn wave change switch to B/cast band. Leave grid cap on. Peak 2nd I.F. trans. pri. and sec. for max. output. |
| 2. | To control grid of 1C7G tube. | 455 Kc/s | 0.01MF. Mica capacitor in series with generator. | Gang plates fully out of mesh. Leave grid cap on. Peak 2nd I.F. trans. pri. and sec. for max. output. |
| 3. | | | | Set centre of dial pointer on centre of end of travel mark near 550 Kc/s. cond. gang plates fully meshed. |
| RECEIVERS FITTED WITH IRON CORED B/CAST, ANTENNA, R.F. AND OSCL. TRANSFORMERS. | | | | |
| 4. | To antenna terminal. | 600 Kc/s | 200MMF. Mica capacitor in series with generator. | Turn gang and dial pointer until dial pointer is on 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. |
| 5. | To antenna terminal. | 1400 Kc/s | 200MMF. Mica capacitor in series with generator. | Turn gang and dial pointer to 1400 Kc/s dial mark. Adjust B/cast oscl. coil. trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output. |

| | | | | |
|---|---|---|---|---|
| 6. | To antenna terminal. | 600 Kc/s | 200MMF. Mica capacitor in series with generator. | Turn gang and dial pointer to 600 Kc/s dial mark. Leave the gang and dial pointer set in this position. Re-peak the B/cast oscl. coil. ind. trim .(iron core) then peak the B/cast ant. and RF. trans. ind. trimmers (iron cores) for max. output. Do not rock the gang to and fro through the signal while adjusting or move the dial pointer off 600 Kc/s dial mark until after the inductance trimmers of these three transformers have been peaked for max. output. |
| 7. | To antenna terminal. | 1400 Kc/s | 200MMF. Mica capacitor in series with generator. | Turn gang and dial pointer to 1400 Kc/s dial mark. Adjust B/cast oscl. coil. trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output. |
| 8. | Turn wave change switch to 31 metre band (this band must be aligned before the 25 and 19 metre bands). | | | |
| 9. | To antenna terminal. | 9.6 Mc/s | 400 Ohm non-inductive resistor in series with generator. | 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. and RF. trans. trims. (iron cores) for max. output. Rock gang to and fro through the signal while adjusting. |
| 10. | To antenna terminal. | 11.8Mc/s | 400 Ohm non-inductive resistor in series with generator. | 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 ant. and RF. trans. trims. (iron cores) for max. output. Rock gang to and fro through the signal while adjusting. |
| 11. | To antenna terminal. | 15.2Mc/s | 400 Ohm non-inductive resistor in series with generator. | 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 ant. and RF. trans. trims. (iron cores) for max. output. Rock gang to and fro through the signal while adjusting. |
| 12. | 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. | | | |


MODEL "NR" I.F. = 455 Kc/s
VOLTAGES MEASURED TO CHASSIS WITH 1000Ω/VOLT METER.
PB570
OUTPUT TEST SOCKET
155V
135V.
150V.
85V.
152V.
32V. D.C. INPUT
6-8v. 0.25A. LAMPS
OSCL.
RF
A
CHASSIS
GROUND
IL5G
IK7G
IM5G
IC7G

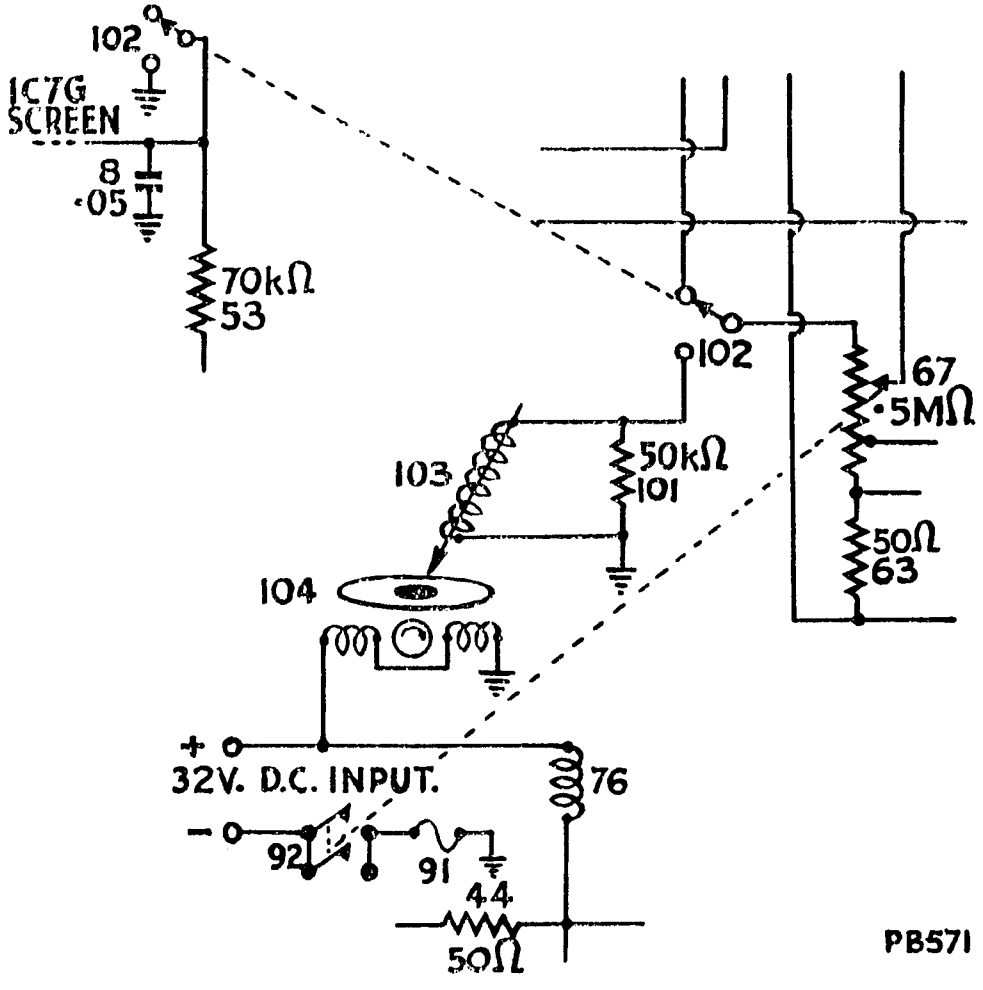
BULLETIN: NR-1 File: RECEIVERS VIBRATOR Date: 30/3/51

Subject:

PICK-UP ATTENUATION CIRCUIT.

The circuit diagram on Page 4 is used when the pick-up has a crystal cartridge.

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



Component Parts List — Model "NR".

| Circuit No. | Description. | Tol.± | Rating. | Part No. |
|---|---|---|---|---|
| 1. | 1MFD Paper Condenser. | 20% | 200V.DCW. | PC182 |
| 2. | 1MFD Paper Condenser. | 20% | 200V.DCW. | PC182 |
| 3. | .5MFD Paper Condenser. | 20% | 200V.DCW. | PC121 |
| 4. | .1MFD Paper Condenser. | 20% | 400V.DCW. | PC103 |
| 5. | .1MFD Paper Condenser. | 20% | 200V.DCW. | PC218 |
| 6. | .1MFD Paper Condenser. | 20% | 200V.DCW. | PC218 |
| 7. | .05MFD Paper Condenser. | 20% | 400V.DCW. | PC109 |
| 8. | .05MFD Paper Condenser. | 20% | 400V.DCW. | PC109 |
| 9. | .05MFD Paper Condenser. | 20% | 400V.DCW. | PC109 |
| 10. | .05MFD Paper Condenser. | 20% | 200V.DCW. | PC102 |
| 11. | .05MFD Paper Condenser. | 20% | 200V.DCW. | PC102 |
| 12. | .05MFD Paper Condenser. | 20% | 200V.DCW. | PC102 |
| 13. | .02MFD Paper Condenser. | 20% | 400V.DCW. | PC111 |
| 14. | .01MFD Paper Condenser. | 20% | 600V.DCW. | PC140 |
| 15. | .004MFD Paper Condenser. | 20% | 600V.DCW. | PC221 |
| 16. | .004MFD Paper Condenser. | 20% | 2000VW. | PC771 |
| 17. | .001MFD Mica Condenser. | 10% | 1000VT. | PC108 |
| 18. | .00046MFD Mica Condenser. | 2½% | 1000VT. | PC728 |
| 19. | .0003MFD Mica Condenser. | 10% | 1000VT. | PC212 |
| 20. | .0003MFD Mica Condenser. | 10% | 1000VT. | PC212 |
| 21. | .0002MFD Mica Condenser. | 10% | 1000VT. | PC124 |
| 22. | .0001MFD Mica Condenser. | 10% | 1000VT. | PC110 |
| 23. | .00005MFD Mica Condenser. | 10% | 1000VT. | PC141 |
| 24. | 85MMFD Silvered Mica Condenser. | 2½% | 1000VT. | PC809 |
| 25. | 85MMFD Silvered Mica Condenser. | 2½% | 1000VT. | PC809 |
| 26. | 80MMFD Silvered Mica Condenser. | 2½% | 1000VT. | PC798 |
| 27. | 70MMFD Silvered Mica Condenser. | 2½% | 1000VT. | PC799 |
| 28. | 50MMFD Silvered Mica Condenser. | 2½% | 1000VT. | PC801 |
| 29. | 50MMFD Silvered Mica Condenser. | 2½% | 1000VT. | PC801 |
| 30. | 30MMFD Silvered Mica Condenser. | ±1MMFD | 1000VT. | PC810 |
| 31. | 30MMFD Silvered Mica Condenser. | ±1MMFD | 1000VT. | PC810 |
| 32. | 25MMFD Silvered Mica Condenser. | ±1MMFD | 1000VT. | PC802 |
| 33. | 15MMFD Silvered Mica Condenser. | ±1MMFD | 1000VT. | PC811 |
| 34. | 6MMFD Ceramicon Condenser. | -1MMFD-0 | 1000VT. | PC831 |
| 35. | 4MMFD Ceramicon Condenser. | -1MMFD-0 | 1000VT. | PC830 |
| 36. | 24MFD Electrolytic Condenser. | 20% | 350PV. | PC184 |
| 37. | 16MFD Electrolytic Condenser. | 20% | 350PV. | PC283 |
| 38. | 8MFD Electrolytic Condenser. | 20% | 350PV. | PC640 |
| 39. | 500/500MFD Electrolytic Condenser Composite type, each | 20% tol. | 12PV. | PC803 |
| 40. | 1.5-18MMFD Trimmer Condenser. | | | PC250 |
| 41. | 1.5-18MMFD Trimmer Condenser. | | | PC250 |
| 42. | 0-30MMFD Trimmer Condenser Wire Wound. | | | PC662 |

Component Parts List — Model "NR".

| Circuit No. | Description. | Tol. | Rating. | Part No. |
|---|---|---|---|---|
| 43. | 3 Gang Varb. Condenser. | | | PC652 |
| 44. | | | | |
| 45. | | | | |
| 46. | 1.75 Megohm Carbon Resistor. | 10% | ½ Watt. | PR248 |
| 47. | 1.75 Megohm Carbon Resistor. | 10% | ½ Watt. | PR248 |
| 48. | 1.75 Megohm Carbon Resistor. | 10% | ½ Watt. | PR248 |
| 49. | .5 Megohm Carbon Resistor. | 10% | 1 Watt. | PR277 |
| 50. | .5 Megohm Carbon Resistor. | 10% | ½ Watt. | PR245 |
| 51. | .25 Megohm Carbon Resistor. | 10% | 1 Watt. | PR496 |
| 52. | 100,000 Ohm Carbon Resistor. | 10% | ½ Watt. | PR103 |
| 53. | 70,000 Ohm Carbon Resistor. | 10% | 1 Watt. | PR617 |
| 54. | 50,000 Ohm Carbon Resistor. | 10% | ½ Watt. | PR160 |
| 55. | 50,000 Ohm Carbon Resistor. | 10% | ½ Watt. | PR160 |
| 56. | 30,000 Ohm Carbon Resistor. | 10% | 1 Watt. | PR156 |
| 57. | 25,000 Ohm Carbon Resistor. | 10% | 1 Watt. | PR116 |
| 58. | 10,000 Ohm Carbon Resistor. | 10% | 1 Watt. | PR325 |
| 59. | 10,000 Ohm Carbon Resistor. | 10% | 1 Watt. | PR325 |
| 60. | 5,000 Ohm Carbon Resistor. | 10% | 1 Watt. | PR304 |
| 61. | 60,000 Ohm Carbon Resistor. | 10% | ½ Watt. | PR125 |
| 62. | 2,000 Ohm Carbon Resistor. | 10% | ½ Watt. | PR253 |
| 63. | 50 Ohm Wire Wound Resistor. | 10% | ½ Watt. | PR280 |
| 64. | 50 Ohm Wire Wound Resistor. | 10% | ½ Watt. | PR280 |
| 65. | 33.3 Ohm Wire Wound Resistor. | 5% | ½ Watt. | PR506 |
| 66. | 16.6 Ohm Wire Wound Resistor. | 5% | 1 Watt. | PR374 |
| 67. | .5 Megohm Carbon Potentiometer tapped at 40K ohms and with DP.ST. switch on rear of housing. | 20% | | PR662 |
| 68. | Transformer--Vibrator, Power. | | | PT937 |
| 69. | Transformer-IF. No. 1. | | | PT869 |
| 70. | Transformer-IF. No. 2. | | | PT869 |
| 71. | Choke, HT. | | | PT109 |
| 72. | Choke, HT. | | | PT109 |
| 73. | Choke, HT—Laminated. | | | PT108 |
| 74. | | | | |
| 75. | Choke, LT—Layer Wound. | | | PT111 |
| 76. | Choke, LT—Spiral Wound. | | | PT439 |
| 77. | Spread Band Coil, 19 Metre (blue spot on coil). | | | PT914 |
| 78. | Spread Band Coil, 25 Metre (white spot on coil). | | | PR913 |
| 79. | Spread Band Coil, 31 Metre (red spot on coil). | | | PT912 |
| 80. | Coil, Oscillator—B/cast. | | | PT860 |
| 81. | Transformer, RF.—B/cast. | | | PT906 |
| 82. | Transformer Antenna—B/cast. | | | PT905 |
| 83. | Transformer, Speaker Input, 15,000 Ohms—2 Ohms Imped. | | | PT934 |

Component Parts List — Model "NR".

| Circuit No. | Description. | Tol.± | Rating. | Part No. |
|---|---|---|---|---|
| 84. | Dial and Band Indicator Lamps. 6-8V. 0.25A. Min. Screw Base. T3¼ Size Bulb. | | | PM678 |
| 85. | Vibrator, 32 Volt Synchronous. | | | M225 |
| 86. | Wave Change Switch. | | | S166 |
| 88. | Speaker, 12" Permag. type, 12M magnet | | | K172 |
| | Speaker, 12" Permag. type, 12K magnet | | | K172-1 |
| 89. | 8MMFD—(Part of Circuit No. 82). | | | PC832 |
| 90. | (Mica Strip for Hash Plate.) | | | 29/216 |
| | (Bakelite Strip for Hash Plate.) | | | 19B/47 |
| 91. | Fuse—1 Strand of No. 36 SWG Tinned Copper Wire. | | | S36T |
| 92. | On/Off Switch (Part of volume control, Circuit No. 67). | | | |
| 93. | 5,000 Ohm Carbon Resistor. | 10% | ½ Watt. | PR250 |
| 94. | 50 Ohm Wire Wound Resistor. | 5% | 5 Watt. | PR708 |
| 95. | 80 Ohm Wire Wound Resistor. | 5% | 10 Watt. | PR707 |
| 96. | .002MFD Paper Condenser. | 20% | 600V.DCW. | PC112 |
| 97. | .25 MFD Paper Condenser. | 20% | 200V.DCW. | PC146 |
| 98. | .005MFD Mica Condenser. | 10% | 1000VT. | PC144 |
| 99. | .5 Megohm Carbon Resistor. | 10% | ½ W. | PR245 |
| 100. | 150,000 Ohm Carbon Resistor. | 10% | ½ W. | PR273 |
| 101. | 50,000 Ohm Carbon Resistor. | 10% | ½ W. | PR160 |
| 102. | Switch-gramo/radio change-over. | | | S176 |
| 103. | Needle—Sapphire Point. | | | M167 |
| 104. | Record Changer, 32 Volt DC. operation Garrard RC70A type (crystal cartridge). | | | M239 |
| | Replacement crystal cartridge. | | | 71/524 |
| | Record Changer, 32 Volt DC. operation Garrard RC70A type (magnetic head). | | | M244 |
| | Record Changer, 32 Volt DC. operation Collaro "500" type (crystal cartridge). | | | M250 |
| | Replacement crystal cartridge. | | | 71/524 |

| Description. | Part No. | Description. | Part No. |
|---|---|---|---|
| Spindle, tone and W/c. extension. | 3/758-1. | Dial Background Assembly. | 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. | A151/30C. |
| Socket & Indicator Lamp Arm Ass'y. | A110/698. | Indicator Light Button—blue. | 27/688-4. |

| Description. | Part No. | Description. | Part No. |
|---|---|---|---|
| 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 Head. | 17/560-10. |
| Screw (4) Chassis to Cabinet Bracket. | 16/560-8. | Clip for I.F. Trans. mount. | 7/670. |
| Coil Mount Clip. | 6/622. | Pulley—small. | 17/87. |
| Pulley—large. | 13/613. | Tuning Spindle. | 6/698. |
| Dial Drum. | A104/698. | "C" Washer for Tuning Spindle. | 19/57-1. |
| Nut for Tuning Spindle. | 41/161. | Speaker Lead Clip Term. Strip Ass'y. | A105/698. |
| Bush for Tuning Spindle. | 4/698. | | |
| 3 Lug Term. Strip. | A103/509. | | |
| 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. |

## Cabinet Parts.

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

## 19, 25 AND 31 METRE ANT. TRANS.

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

Lead from bottom lug (mounting end):-
AVC.

## 19, 25 AND 31 METRE RF. TRANS.

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

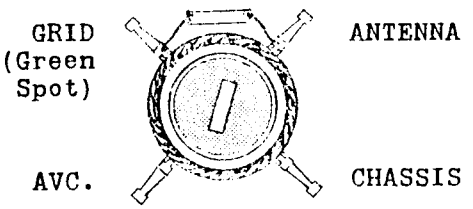
Lead from bottom lug (mounting end):-
CHASSIS

## 19, 25 AND 31 METRE OSCL. COIL.

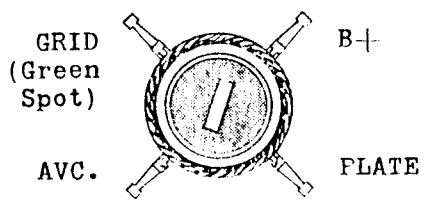
Lead from top lug (iron core end):-
GRID

Lead from bottom lug (mounting end):-
PLATE

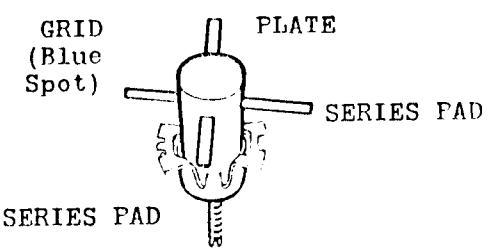
## ANTENNA TRANS. B/CAST.



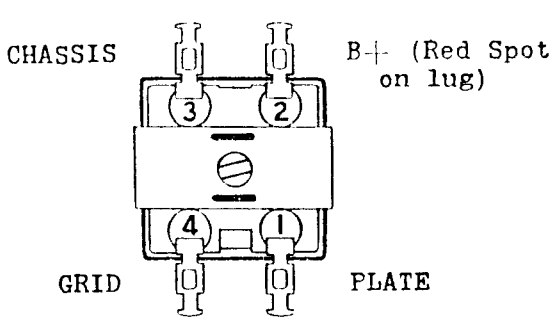

## RF. TRANS. B/CAST.



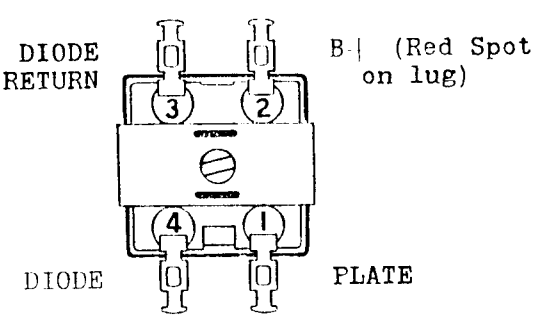

## OSCL. COIL B/CAST.




## 1ST IF. TRANS.




## 2ND IF. TRANS.



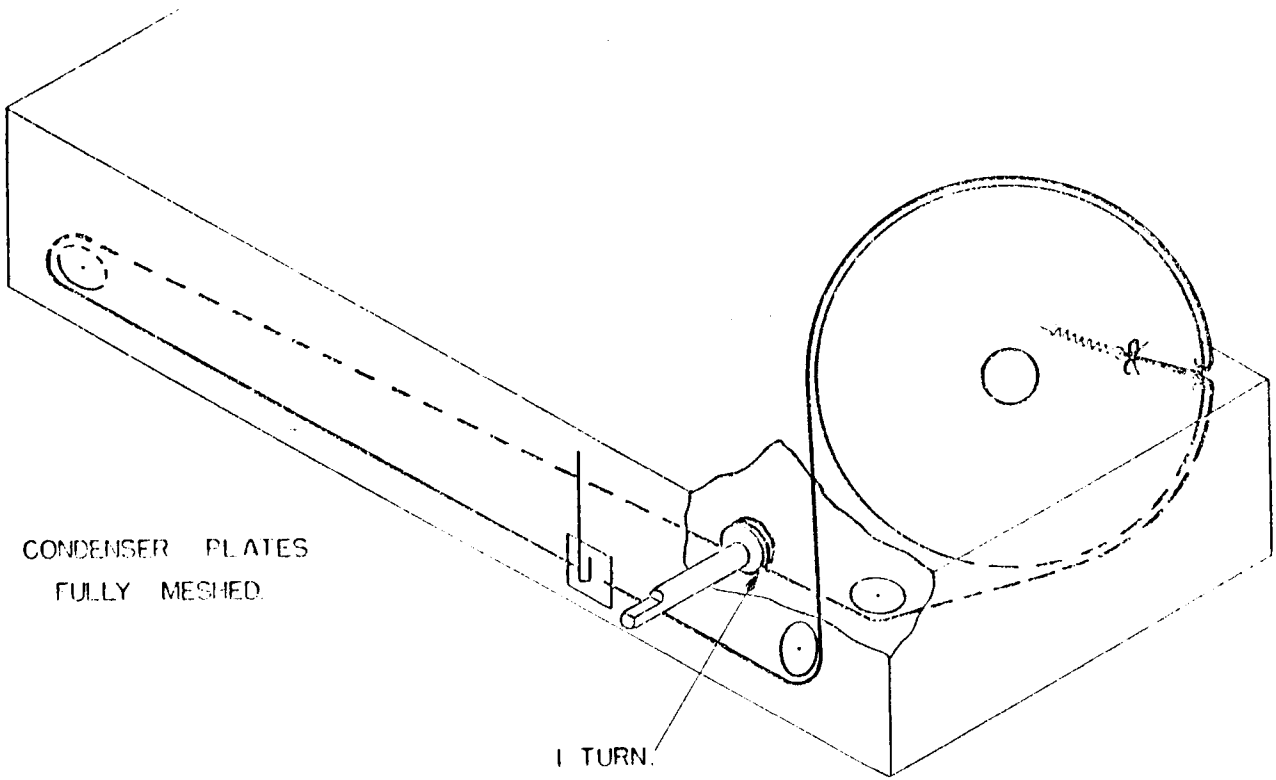
BULLETIN: NR-1 File: RECEIVERS VIBRATOR Date: 30/3/51

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.



BULLETIN: NR-1 File: RECEIVERS VIBRATOR Date: 30/3/51

Subject:

## Instructions for Removing Chassis from Cabinet.

It is not necessary to remove the chassis from the cabinet to re-align the receiver or for general checking of 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.

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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 gramo-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 mains leads from mains junction block.
8. Remove wave change and tone control extension spindles.
9. Lay the cabinet face downwards on a thick cushion placed near the top of the cabinet and so that the cushion raises the top of the cabinet about two feet.
10. From the rear of the cabinet carefully push the record changer section about half out of the cabinet.
11. Remove two screws from each end of the 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.
12. Bend over the top of the cabinet and move the chassis toward the record changer and 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.