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



# TECHNICAL BULLETIN

# MODEL—PR

5 VALVE SUPERHETERODYNE BROADCAST PORTABLE RECEIVER

TUNING RANGE: 535 – 1640 Kilocycles.

FOR OPERATION FROM: One 1.5 Volt "A" Battery and 90 Volts "B" Battery (Two 45 Volt "B" Batteries connected in Series).

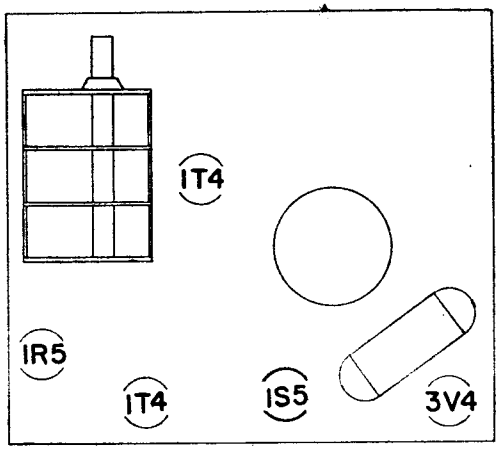
BATTERY CONSUMPTION: "A" Battery 300 Milliamps
"B" Battery 12.7 Milliamps (no signal).

POWER OUTPUT: 250 Milliwatts maximum.
100 Milliwatts undistorted

INTERMEDIATE FREQUENCY: 455 Kc/s.

THIS BULLETIN CONTAINS:






VALVE PLACEMENT DIAGRAM

# ALIGNMENT INSTRUCTIONS

| Equipment:- | Alignment Conditions:- |
|---|---|
| Signal Generator | Load Impedance: 10,000 Ohms |
| Output Meter | Output Level : 25 Milliwatts |
| Alignment Tools: Type M195 & PM581 | "A" Battery : 1.5 Volts |
| Mica Capacitor: 0.01MFD for IF. Trans. alignment | "B" Battery : 90 Volts |
| | Volume Control: Max. Volume (fully clockwise) |
| Dummy Antenna: 200MMFD mica capacitor | Intermediate Frequency: 455 Kc/s. |

TO REMOVE THE CHASSIS FROM THE CABINET: Pull control knobs straight upward. Remove two screws holding dial in position. Unscrew a small screw in handle pivots to remove the handle. Remove cabinet base, battery packers and batteries. Inside the cabinet at each side of the chassis near the top a $\frac{1}{4}$" x 5/32" Whit. screw fastens the chassis to the cabinet. When these screws are removed the chassis will slide out of the cabinet. Refitting the chassis to the cabinet is the exact reverse procedure to removing it.

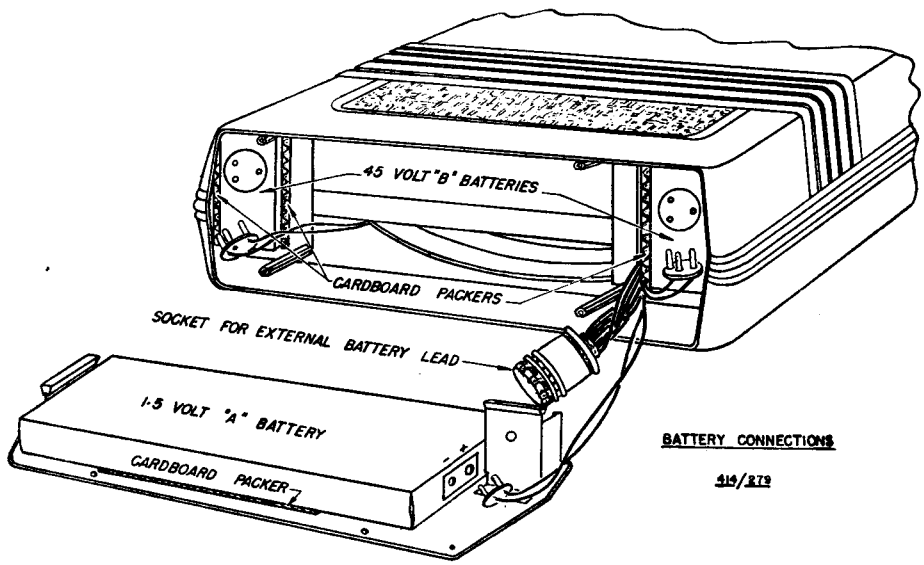
| Operation | Generator Connection | Generator Frequency | Dummy Antenna | Instructions |
|---|---|---|---|---|
| 1. | Fasten dial reading to top of chassis with the two screws which held the dial to the cabinet. Fit control knobs to their spindles. | | | |
| 2. | Remove speaker and loop antenna from their mounting supports. - | | | |
| 3. | To control grid of 1T4 IF. valve (pin No. 6) | 455Kc/s. | .01MFD mica capacitor in series with generator | Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output. |
| 4. | To control grid of 1R5 valve (pin No. 6) | 455Kc/s. | " " | Leave grid wire attached to valve socket. Turn gang plates fully out of mesh. Peak 1st IF. trans. pri. and sec. for max. output. |
| 5. | Refit speaker and loop antenna to their mount supports. | | | |
| 6. | DIAL POINTER SETTING: With the cond. gang plates fully meshed set pointer of tuning knob on end of travel spot on dial reading near 540 Kc/s. | | | |
| 7. | Lay the receiver chassis, speaker downwards and with the control knobs to the left of the operator. Place the batteries in their respective positions around the chassis. This is to provide the same amount of mass around the loop antenna as exists when fitted into the cabinet. | | | |
| 8. | To AVC. end of loop (out side turn of sec.) | 600Kc/s. | 200MMFD. mica capacitor in series with generator | Turn cond. gang and tuning knob until pointer is on 600Kc/s. Adjust oscl. coil ind. trim. (iron core) and RF. trans. ind. trim (iron core, from bottom of trans.) for max. output. Rock cond. gang to and fro through the signal while adjusting. |

## BATTERY REPLACEMENT (Refer Diagram):

The internal batteries used with this receiver are one 1.5 volt "A" battery and two 45 volt "B" batteries.

These batteries are not re-chargeable and when worn out must be replaced with new ones. When connecting new batteries, follow the instructions exactly, because if you make a mistake you are liable to blow out all the valves.

1. Make sure the receiver is switched off.
2. Lay the receiver, speaker grille downwards, on a flat surface.
3. Unscrew and withdraw the two screws at each end of the cabinet base plate, then remove the cabinet base plate, which will allow easy access to the batteries.
4. Withdraw the small plugs from the batteries then replace the batteries using strips of cardboard as packers to overcome any looseness.
5. Refit the small plugs to the sockets of the new batteries, then refit the cardboard packer, base plate and screws.




## OPERATION FOR EXTERNAL BATTERIES

When the receiver is required to operate for long periods, heavy-duty, long-life external batteries may be connected to the receiver as follows:-

1. Switch the receiver off, then remove the rubber cover from the hole in the base of the cabinet.
2. Inside the hole is a short lead with a plug and socket attached. Pull this lead out of the hole and remove the small shorting plug from the socket.
3. Obtainable from the factory is a 3 ft. extension lead - Part No. PA407. The small plugs on this lead are plugged into their respective sockets on the heavy-duty batteries. The 8-pin plug is inserted into the socket on the receiver lead from which the shorting plug was removed. The 8-pin plug has a centre guide pin for correctly locating the plug into the receiver socket. The receiver may now be switched on, and operates from the external batteries. The external batteries required are: One 1.5 volt heavy-duty long-life "A" battery and two 45 volt heavy-duty long-life "B" batteries. When operating from external batteries, current is not being consumed from the internal batteries.
4. When the receiver is again required for portable operation, first switch the receiver off, then remove the 8-pin plug from the socket and refit the shorting plug. Refit the short lead with the plug and socket attached into its hole, and refit the rubber cover into the hole in the cabinet base.

## STYLING LIST – CREAM CABINET

Gear drive cond. gang : 1 15/16" dia. knobs : Dial reading flat plate on cabinet.

| | Part No. | |
|---|---|---|
| Cabinet Assy. complete | A105/681-3 | |
| Consisting of:- | | |
| Cabinet | 89/81-1 | Cream |
| Cabinet grille bars | 88/81-2 | Cream |
| Front and rear grille weave | 21/681-2 | Burgundy |
| Handle Ass'y. complete | A104/681-3 | |
| Consisting of:- | | |
| Handle | 16/681-1 | Cream |
| Handle – small section | 18/681-3 | Cream |
| Handle – metal strip insert | 15/681 | |
| Studs – handle mounting | 17/681 | |
| Knobs – Tuning or Volume | 179/81-1 | Cream |
| Knob Spring – circular type | 22/755 | |
| Dial Reading: fits flat on tap of cabinet:- | | |
| N.S.W. | 42/681-2 | |
| Vic.-Tas. | 42/681-3 | |
| Qld. | 42/681-4 | |
| S.A.-W.A. | 42/681-5 | |

## STYLING LIST – WALNUT CABINET

Gear drive cond. gang: 1 15/16" dia. knobs: Dial reading flat plate on cabinet.

| | Part No. | |
|---|---|---|
| Cabinet Ass'y. complete | A105/681-12 | |
| Consisting of: | | |
| Cabinet | 89/81-4 | |
| Cabinet grille bars | 88/81-4 | |
| Front and rear grille weave | 21/681-4 | |
| Handle ass'y. complete | A104/681-4 | |
| Consisting of:- | | |
| Handle | 16/681-4 | Walnut |
| Handle – small section | 18/681-4 | Walnut |
| Handle – metal strip insert | 15/681 | |
| Dial Reading: fits flat on top of cabinet:- | | |
| N.S.W. | 42/681-2 | |
| Vic.-Tas. | 42/681-3 | |
| Q'ld. | 42/681-4 | |
| S.A.-W.A. | 42/681-5 | |
| Studs – handle mounting | 17/681 | |
| Knobs – tuning or volume | 179/81-2 | Walnut |
| Knob Spring – circular type | 22/755 | |

| Operation | Generator Connection | Generator Frequency | Dummy Antenna | Instructions |
|---|---|---|---|---|
| 9. | To AVC. end of loop (outside turn of sec.) | 1400Kc/s. | 200MMFD mica capacitor in series with generator | Turn cond. gang and tuning knob until pointer is on 1400Kc/s. Adjust oscl. trimmer cond. for logging and peak RF. and loop antenna trimmer condensers for max.-output. Rock cond. gang to and fro through the signal when peaking the RF. and loop trimmer conds. |

10. Repeat operations Nos. 8 and 9.

11. Refit chassis to cabinet.

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NOTE:-Pin No. 5 on the external battery lead socket connects to the output valve plate. The output meter may be connected between this pin and the chassis.

## EXTERNAL ANTENNA

On the rear of the receiver cabinet, about the centre, are two holes marked "A" for antenna and "E" for earth. Insert the end of the antenna lead into the hole marked "A" and the end of the earth lead into the hole marked "E".

Two small plugs are supplied with each receiver. These plugs when connected (soldered) to the ends of the antenna and earth leads, provide an easy and mechanically sound connection to the sockets for the external antenna and earth.

An antenna lead approx. 50 ft. long, raised as high as possible from the ground, is recommended.

An earth lead is essential to obtain maximum results from the external antenna.

Should an earth connection not be obtainable, place the receiver close to the ground and connect to the earth socket approx. 50 ft. of wire laid along the ground and directly beneath the antenna lead.

STORAGE WHEN OUT OF USE:-

It is not advisable to leave an exhausted battery in the receiver. If the receiver is stored away or not required for long periods, even partly-used batteries should be removed and stored in a dry, cool place. This is a precautionary measure against the swelling and corroding action of worn-out batteries, which applies to all battery-operated devices, such as torches, etc.

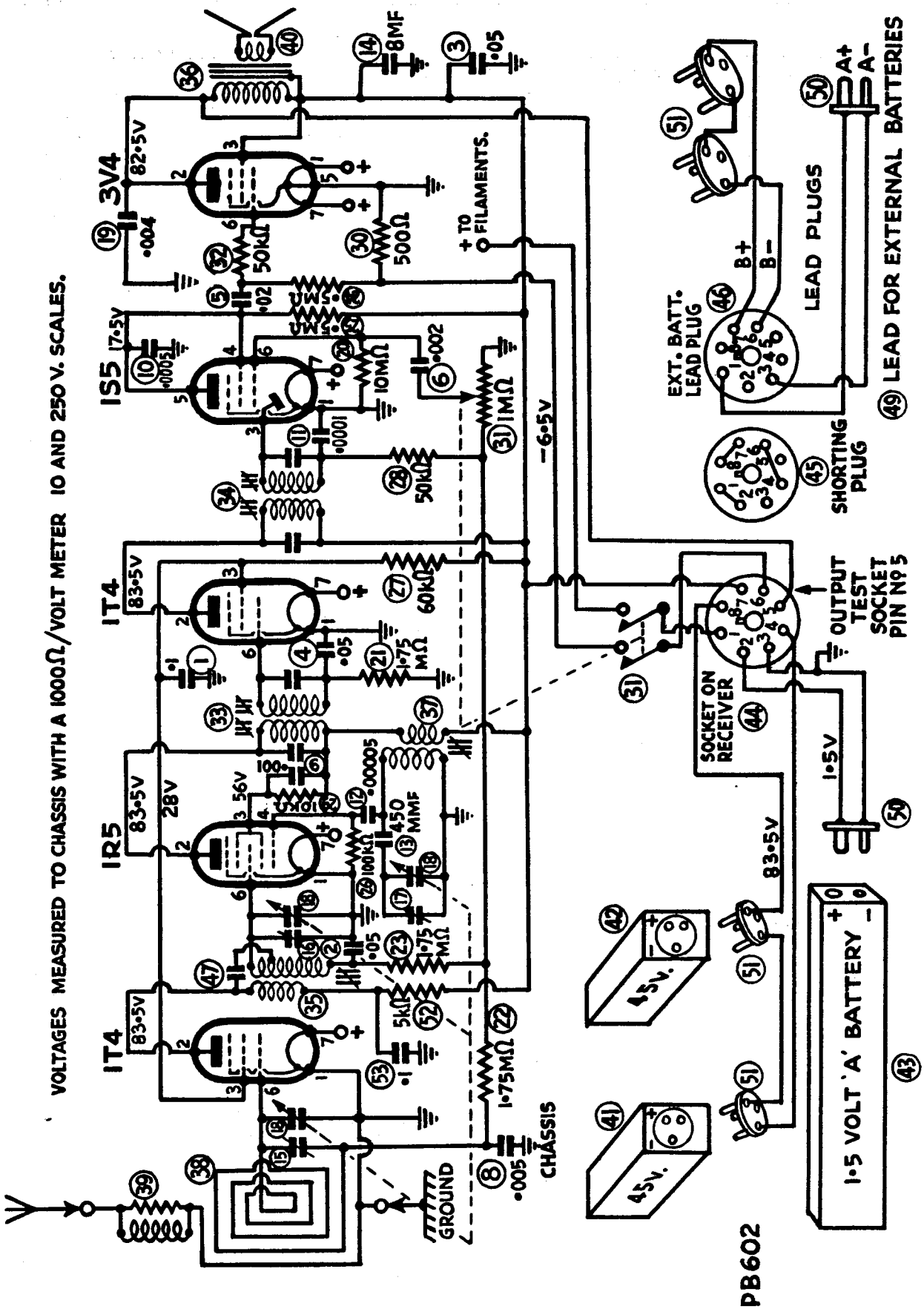
## CLEANING AGENT FOR PLASTIC CARRYING CASE

The plastic sections of the receiver carrying case should not be cleaned with benzol, petrol or similar cleaning liquids as these are solvents for the plastic materials.

If the case becomes dirty a piece of cloth dampened with water should be used.

Scratches may be removed with fine steel wool and then polished with a good brand of car polish.

We have found Embex or Kar-pol brands to be satisfactory.


VOLTAGES MEASURED TO CHASSIS WITH A 1000Ω/VOLT METER 10 AND 250 V. SCALES.
3V4
IS5
IT4
IR5
IT4
82·5V
17·5V
83·5V
28V
56V
+ TO FILAMENTS.
−6·5V
CHASSIS
GROUND
LEAD PLUGS
EXT. BATT. LEAD PLUG
SHORTING PLUG
LEAD FOR EXTERNAL BATTERIES
OUTPUT TEST SOCKET PIN No 5
SOCKET ON RECEIVER
1·5V
45V.
45V.
1·5 VOLT 'A' BATTERY
PB602

| Description | Part Number |
|---|---|
| Terminal Strip Assy. 3 lug (5) | A103/509 |
| Di-cast Mount Block for vol. control | 16/589 |
| Grommet, cond. mounting | 64/30A |
| Brass Bush, cond. mounting | 93/53 |
| Mount Strip for input trans. | 347/64 |
| Insulating Strip for input trans. | 348/64 |
| Rivets for mounting socket rubber bases | 9/681 |
| Rubber Bases for valve sockets | 2/681 |
| Socket 7-pin, rubber mounted | A104/58-1 |
| Socket 7-pin, flange mounted | A104/58 |
| Knob Spring Insert | 22/755 |
| Studs - handle pivot | 17/681 |
| "C" Washer for handle pivot | 32/57-2 |
| Cabinet Base Assy. | A107/681-1 |
| Rubber Cover for ext. batt. lead hole | 38/261 |
| Rubber Mount Feet | 28/658 |
| Astor Badge | 53/634 |
| Earth Transfer "E" | 29/245 |
| Aerial Transfer "A" | 30/245 |
| Speaker Lead Junction Clip Assy. | A105/698 |
| Phone Tip Plugs for ext. aerial and earth | 11/252 |
| Mount Spacer for speaker | 3/681 |
| Mount Spacer for loop antenna | 7/681 |
| Valve Shield | 38/635 |
| Clip for IF. trans. mounting | 7/670 |
| Clip for oscl. coil mounting | 6/622 |
| Screws - dial mount. $\frac{5}{8}$" x No. 8 P.K. type "Z" | 39/560-20 |
| Screws - handle, pivot mount. $\frac{1}{4}$" x 3/32" Whit RD.HD. | 4/560-2 |
| Screws - chassis, cabinet mount $\frac{1}{4}$" x 5/32" Whit. RD.HD. | 16/560-4 |

## STYLING LIST - BURGUNDY CABINET

Gear drive cond. gang: $1\frac{15}{16}$" dia. knobs: Dial reading flat plate on cabinet.

| | Part No. | |
|---|---|---|
| Cabinet Assy. complete | A105/681-5 | |
| Consisting of:- | | |
| Cabinet | 89/81-2 | Burgundy |
| Cabinet grille bars | 88/81-3 | Fawn |
| Front and rear grille weave | 21/681-4 | Fawn |
| Handle Ass'y. complete | A104/681-2 | |
| Consisting of:- | | |
| Handle | 16/681-2 | Burgundy |
| Handle - small section | 18/681-2 | Fawn |
| Handle - metal strip insert | 15/681 | |
| Studs - handle mounting | 17/681 | |
| Knobs - Tuning or Volume | 179/81 | Burgundy |
| Knob spring - circular type | 22/755 | |
| Dial reading - fits flat on top of cabinet:- | | |
| N.S.W. | 42/681-2 | |
| Vic.-Tas. | 42/681-3 | |
| Q'ld. | 42/681-4 | |
| S.A.-W.A. | 42/681-5 | |

## COMPONENT PARTS LIST

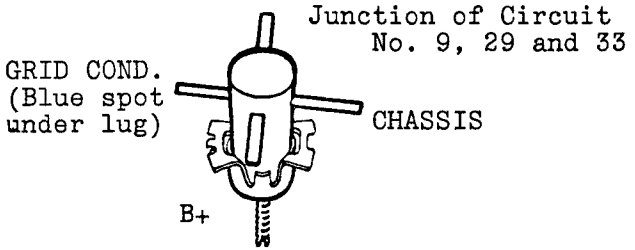
| Circuit No. | Description | Tol.± | Rating | Part Number |
|---|---|---|---|---|
| 1. | .1MFD. Paper Condenser | 20% | 200V.DCW | PC218 |
| 2. | .05MFD. Paper Condenser | 20% | 200V.DCW | PC102 |
| 3. | .05MFD. Paper Condenser | 20% | 200V.DCW | PC102 |
| 4. | .05MFD. Paper Condenser | 20% | 200V.DCW | PC102 |
| 5. | .02MFD. Paper Condenser | 20% | 400V.DCW | PC111 |
| 6. | .002MFD. Paper Condenser | 20% | 600V.DCW | PC112 |
| 7. | | | | |
| 8. | .005MFD. Paper Condenser | 10% | 600V.DCW | PC700 |
| 9. | .001MFD. Mica Condenser | 10% | 1000VT. | PC108 |
| 10. | .0005MFD. Mica Condenser | 10% | 1000VT. | PC144 |
| 11. | .0001MFD. Mica Condenser | 10% | 1000VT. | PC110 |
| 12. | .000005MFD. Mica Condenser | 10% | 1000VT. | PC141 |
| 13. | 450MMFD. Mica Condenser | 2½% | 1000VT. | PC727 |
| 14. | 8MFD. Electrolytic Condenser | 20% | 525PV. | PC640 |
| 15. | 1.5-18MMFD. Trimmer Condenser | | | PC250 |
| 16. | 1.5-18MMFD. Trimmer Condenser | | | PC250 |
| 17. | 2-30MMFD. Trimmer Condenser (coaxial) | | | PC417 |
| 18. | 3 Gang Variable Condenser (with gears) | | | PC839 |
| 19. | .004MFD. Paper Condenser | 20% | 600V.DCW | PC221 |
| 20. | 10 Megohm Carbon Resistor | 10% | 1 Watt | PR236 |
| 21. | 1.75 Megohm Carbon Resistor | 10% | ½ Watt | PR248 |
| 22. | 1.75 Megohm Carbon Resistor | 10% | ½ Watt | PR248 |
| 23. | 1.75 Megohm Carbon Resistor | 10% | ½ Watt | PR248 |
| 24. | .5 Megohm Carbon Resistor | 10% | ½ Watt | PR245 |
| 25. | .5 Megohm Carbon Resistor | 10% | 1 Watt | PR277 |
| 26. | 100,000 Ohm Carbon Resistor | 10% | ½ Watt | PR103 |
| 27. | 60,000 Ohm Carbon Resistor | 10% | 1 Watt | PR415 |
| 28. | 50,000 Ohm Carbon Resistor | 10% | ½ Watt | PR160 |
| 29; | 10,000 Ohm Carbon Resistor | 10% | 1 Watt | PR325 |
| 30. | 500 Ohm Carbon Resistor | 10% | 1 Watt | PR289 |
| 31. | 1 Megohm Carbon Potentiometer with DP.ST. switch | | | PR329 |
| 32. | 50,000 Ohm Carbon Resistor | 10% | ½ Watt | PR160 |
| 33. | 1st IF. Transformer | | | PT864 |
| 34. | 2nd IF. Transformer | | | PT864 |
| 35. | RF. Transformer | | | PT890 |
| 36. | Input Transformer 10,000 Ohm Imped.(less insulating strips) | | | PT816 |
| 37. | Oscillator Coil | | | PT860 |
| 38. | Loop Antenna Coil (contains loading coil and trim. cond. circuit No. 15) | | | PT944 |
| 39. | Antenna Loading Coil | | | PT942 |
| 40. | Permag. Speaker 8 inch (less input trans.) | | | K119 |
| 41. | "B" Battery 45 Volt (Eveready type 482) (Gen. Dry type MP-45) | | | M130 |
| 42. | "B" Battery 45 Volt (Eveready type 482) (Gen. Dry type MP-45) | | | M130 |
| 43. | "A" Battery 1.5 Volt (Eveready type 745) (Gen. Dry type P-1.5L) | | | M129 |
| 44. | Socket, 8 Pin (Socket on set for ext. batt. lead plug) | | | PM216 |
| 45. | Shorting Plug, 8 Pin | | | A148/300 |
| 46. | Plug, 8 pin<br>Cover for 8 pin plug | | | PM350<br>216/244 |
| 47. | 25MMFD. Cond. part No. PC694 (part of circuit No. 35) | | | |
| 48. | | | | |
| 49. | Lead for External Batteries | | | PA407 |
| 50. | 2 pin battery plug | | | 336/300 |
| 51. | 3 pin battery plug | | | 335/300 |
| 52. | 5,000 Ohm Carbon Resistor | 10% | 1 Watt | PR304 |
| 53. | .1MFD. Paper Condenser | 20% | 200V.DCW | PC218 |

## LOOP ANTENNA

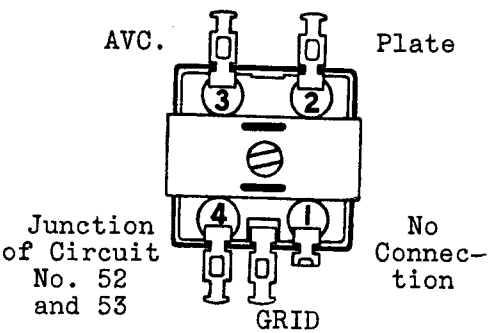
Primary (3 turns) outside turn – ANTENNA LOADING COIL
inside turn – EARTH SOCKET AND CHASSIS

Secondary outside turn – AVC.
inside turn – GRID.

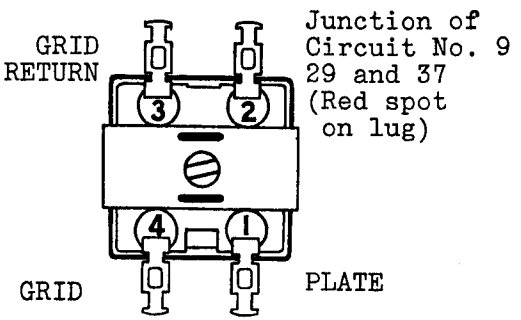
### OSCL. COIL




### RF. TRANS.




### No. 1 IF. TRANS.




### No. 2 IF. TRANS