



ECLIPSE RADIO PTY. LTD.

(A DIVISION OF ELECTRONIC INDUSTRIES LTD.)

11-21 STURT STREET, SOUTH MELBOURNE
TECHNICAL BULLETIN

BULLETIN BPR-1

File: RECEIVERS PORTABLE

Date: 10/10/51

Page 1

PORTABLE MODEL "BPR"

5 VALVE BATTERY OPERATED SUPERHETERODYNE BROADCAST RECEIVER

OPERATION IS 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 Milliamperes
"B" Battery 12.7 Milliamperes (no signal).

POWER OUTPUT:

250 Milliwatts Maximum.
100 Milliwatts Undistorted.

TUNING RANGE:

535 - 1640 Kilocycles.

INTERMEDIATE FREQUENCY:

455 Kc.

THIS BULLETIN CONTAINS:

1. Technical Specifications.
2. Alignment Procedure.
3. Circuit Diagram.
4. Component Parts List.
5. Coil and IF. Transformer Connections.
6. Valve Placement Diagram.
7. Instructions for Replacing Batteries.
8. Instructions for Operation from External Batteries.
9. Connections for External Antenna and Earth.
10. Dial Cording Diagram.

ALIGNMENT INSTRUCTIONS**Equipment:-**

Signal Generator
 Output Meter
 Alignments Tools: Type M195 & PM581.
 Mica Capacitor: 0.01MFD for IF.
 Trans. alignment.
 Dummy Antenna: 200MMFD mica capacitor.
 Alignment Template: Type PB617.

Alignment Conditions:-

Load Impedance: 10,000 Ohms.
 Output Level: 25 Milliwatts
 "A" Battery: 1.5 Volts
 "B" Battery: 90 Volts.
 Volume Control: Max. Volume (fully clockwise).
 Intermediate Frequency: 455Kc.

TO REMOVE CHASSIS FROM CABINET: Pull control knobs straight upward. Remove cabinet base by unscrewing the screws around the base of the cabinet. Remove cardboard battery packers and then the batteries. From the top of the cabinet unscrew the screws fastening the dial then unscrew and withdraw four screws on top of the cabinet. The chassis will then slide out of the cabinet. Do not remove the screws fastening the handle brackets to the cabinet. Refitting the chassis to the cabinet is the exact reverse procedure to removing it.

| Operation No. | Generator Connection | Generator Frequency | Dummy Antenna | Instructions |
|---------------|--|---------------------|--|--|
| 1. | | | | Fasten the dial reading off the cabinet onto the cardboard alignment template PB617 with $\frac{3}{8}$ " x $\frac{1}{8}$ " screws and nuts then fit the alignment template in position on top of the chassis with the four self-tapping screws which hold the chassis 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. | 0.01MFD 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. | 0.01MFD mica capacitor in series with generator. | 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 centre of dial pointer on end of travel stop on dial reading near 540Kc/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 (outside turn of sec.) | 600Kc. | 200MMFD mica capacitor in series with generator. | Turn cond. gang and dial pointer until pointer is on 600Kc. 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.

9. To AVC. end of loop (outside turn of sec.) 1400Kc. 200MMFD mica capacitor in series with generator. Turn cond. gang and dial pointer until pointer is on 1400Kc. 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 No. 8 and 9.
11. Remove control knobs and alignment template from the chassis then refit the chassis to the cabinet.

NOTE 1: Pin No. 5 on the external battery lead socket connects to the output tube plate. The output meter may be connected between this pin and the chassis.

NOTE 2: If the dial pointer does not log correctly after re-fitting the chassis to the cabinet. Remove the dial reading from the cabinet and hold the tuning spindle with one hand. With the other hand slide the base end of the pointer the required distance. Refit dial reading and re-check logging.

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.

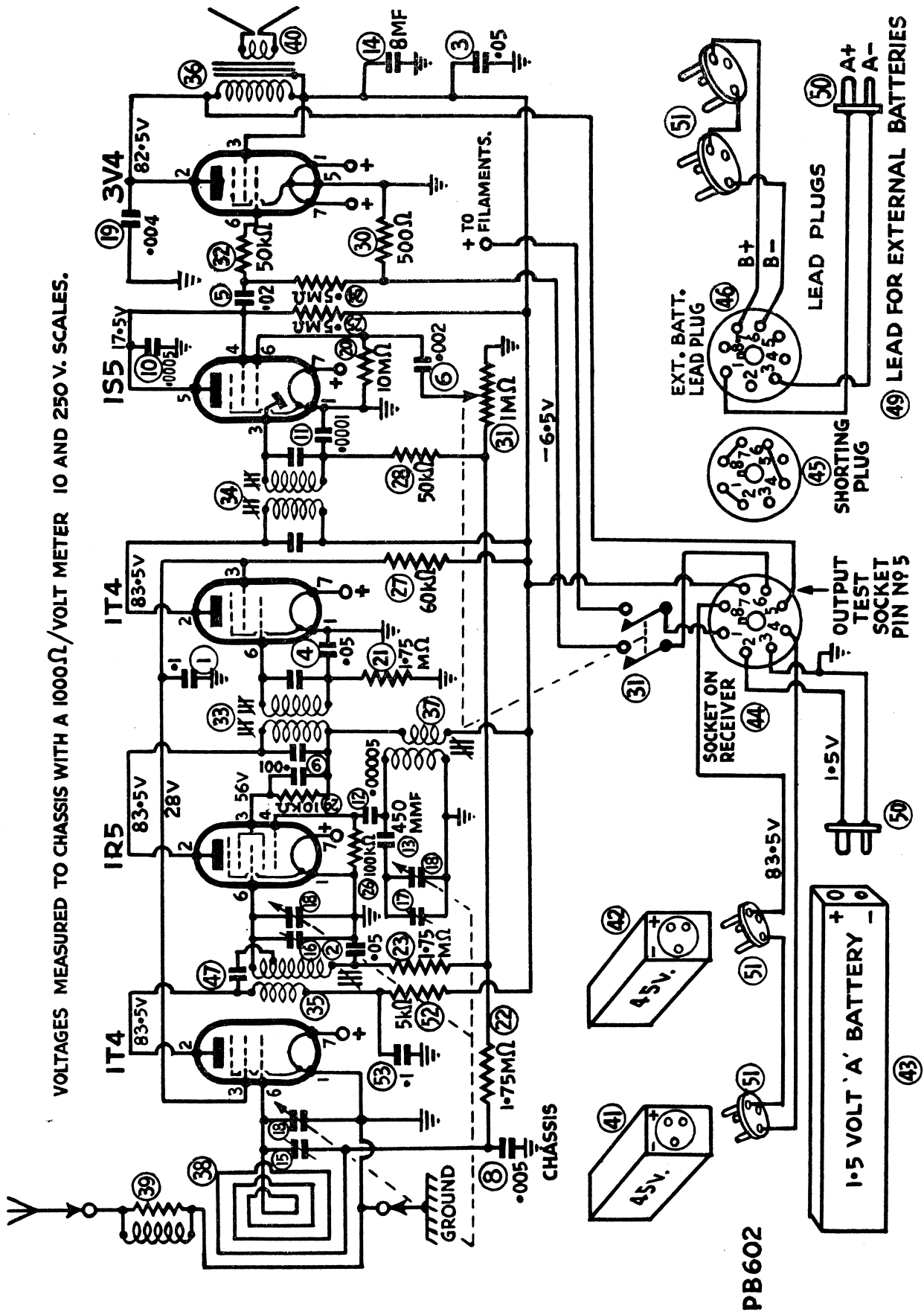
EXTERNAL ANTENNA AND EARTH SOCKETS

Viewing the receiver from the rear with the handle uppermost, the socket at the right is for the antenna and the socket at the left for the earth connection.

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.

VOLTAGES MEASURED TO CHASSIS WITH A 1000 Ω /VOLT METER 10 AND 250 V. SCALES.



COMPONENT PARTS LIST

| Circuit No. | Description | Tol.± | Rating | Part No. |
|-------------|--|-------|----------|----------|
| 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. | .00005MFD 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 | | | PC701 |
| 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 | | | PR718 |
| 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 | | | PM350 |
| | { Cover for 8 Pin Plug | | | 216/224 |
| 47. | 20MMFD Cond. (part of Circuit No. 35) | | | |
| 48. | | | | |
| 49. | Lead for External Batteries | | | PA407 |

LOOP ANTENNA

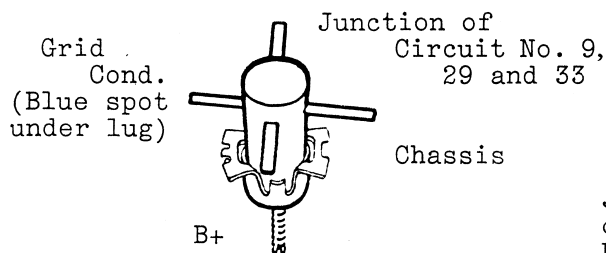
Primary (3 turns) Outside Turn - ANTENNA LOADING COIL.

Inside Turn - EARTH SOCKET AND CHASSIS.

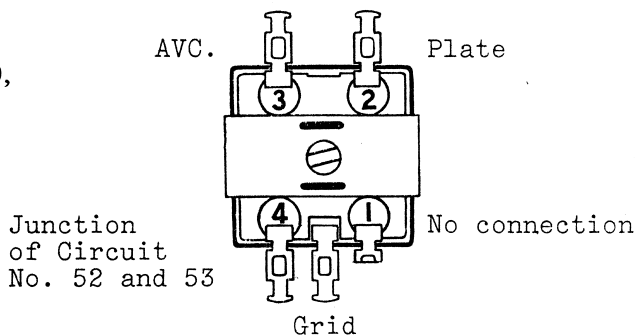
Secondary Outside Turn - AVC.

Inside Turn - GRID.

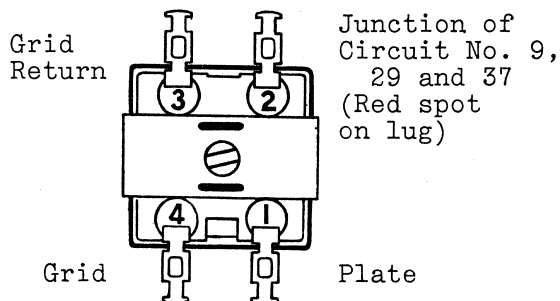
OSCL. COIL



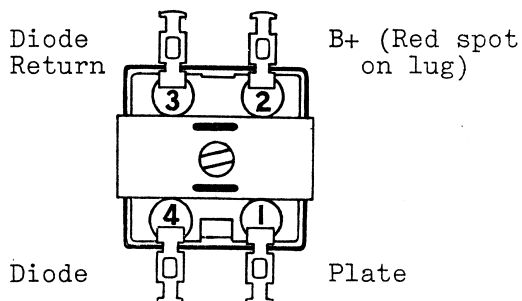
RF. TRANS.



No. 1 IF. TRANS.



No. 2 IF. TRANS.

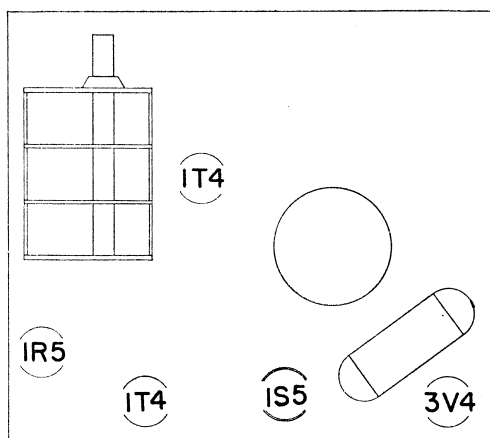


BATTERY REPLACEMENT (Refer Diagram)

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

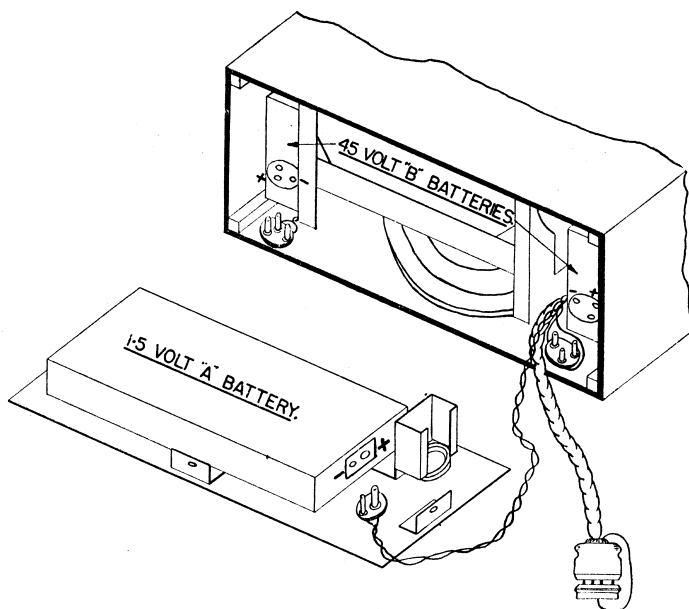
These batteries are not re-chargeable and when worn out must be replaced with new ones. When connecting new batteries, follow the instructions exactly, because if you make a mistake you are liable to blow out all the valves.

1. Make sure the receiver is switched off.
2. Lay the receiver, speaker grille downwards, on a flat surface.
3. Unscrew and withdraw the four screws around the base of the cabinet, 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.



VALVE PLACEMENT DIAGRAM

785/279



OPERATION FROM 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:-

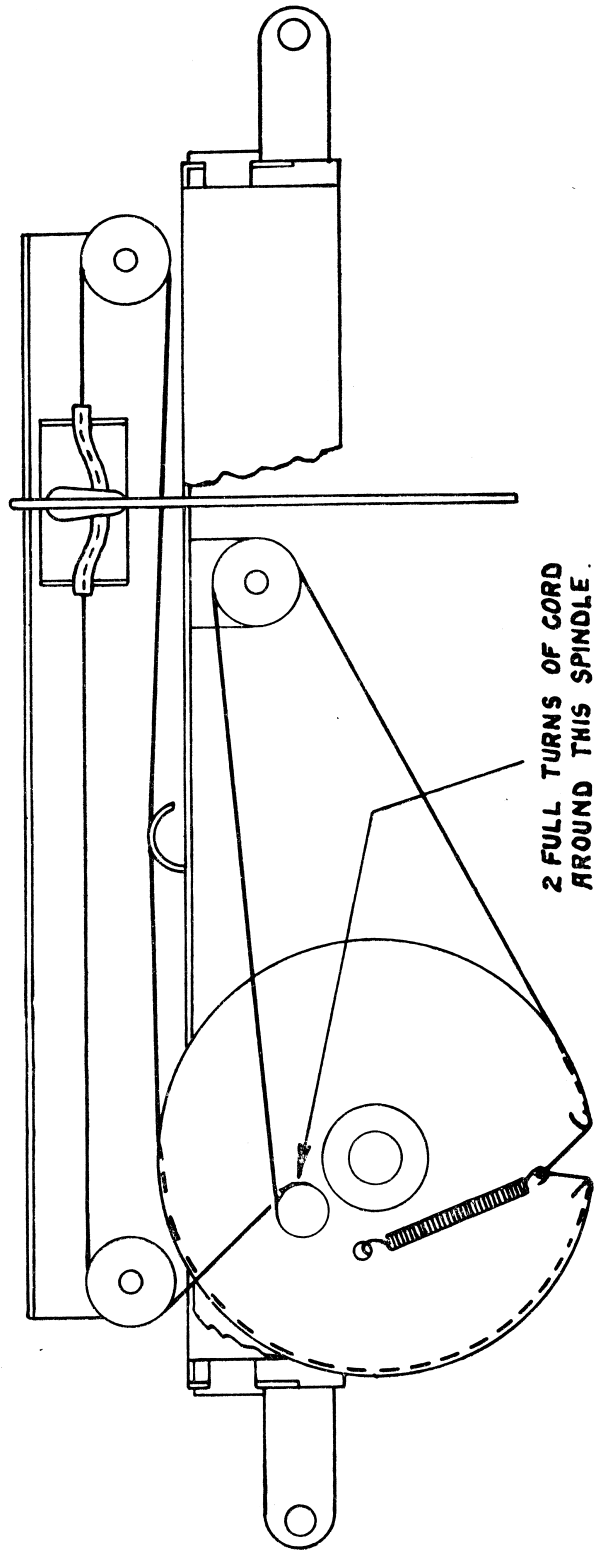
1. Switch the receiver off, then remove the rubber cover from the hole in the base of the cabinet.
2. Inside the hole is a short lead with a plug and socket attached. Pull this lead out of the hole and remove the small shorting plug from the socket.
3. Obtainable from the factory is a 3 ft. extension 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 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.

CORDING OF DIAL DRIVE

The length of cord required is 4 ft. 3 in., which includes about 8 in. to spare for tying to the tension spring.

Cord, Part No. 7/282.

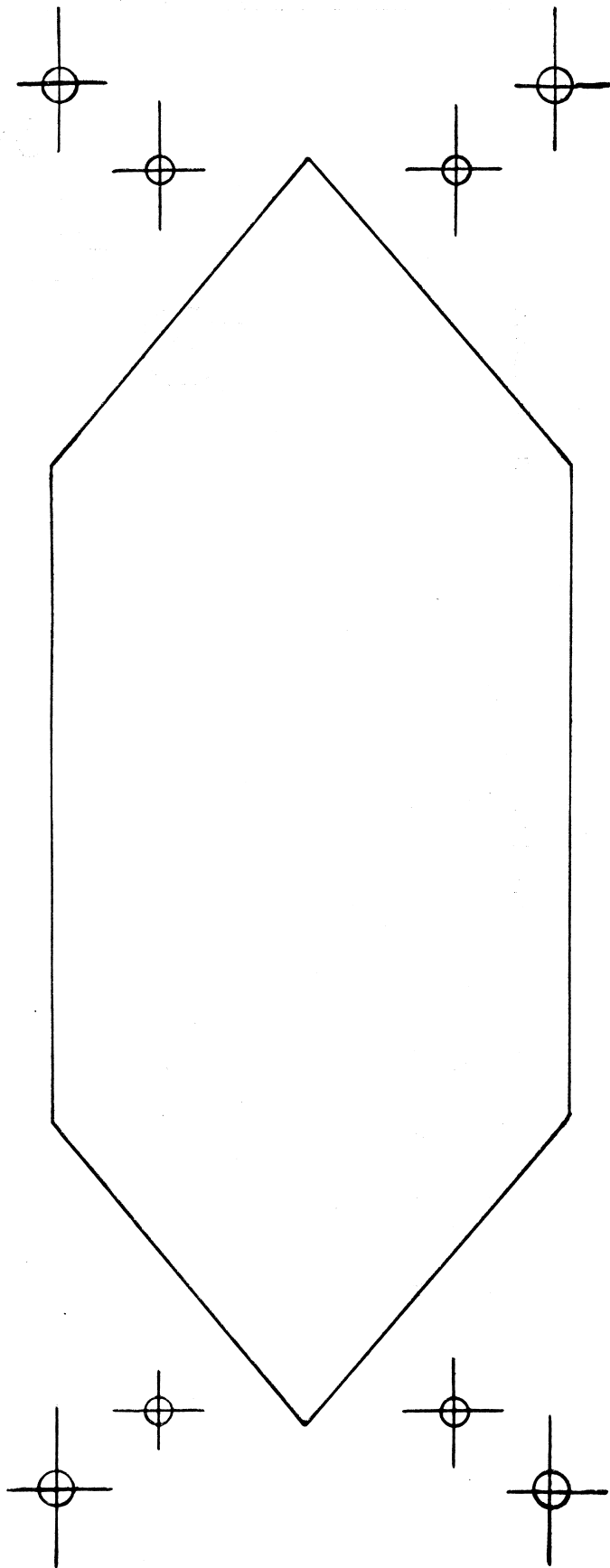
Spring, Part No. 8/613.



The alignment template part No. PB617 supplied with this Service Bulletin is a thin strip of cardboard on which is printed the diagram shown on this page.

For alignment purposes the dial from the receiver cabinet is mounted to the alignment template and then the template is mounted on the receiver chassis as detailed in para. 1 of the alignment procedure on page 2.

Should the alignment template be lost a new one can be made from the diagram on this page. The centre hexagonal shape of the template has to be cut out to allow the pointer to be seen through the dial.



PB 617