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

TECHNICAL BULLETIN

"MODEL GPR"

5 VALVE SUPERHETERODYNE PORTABLE RECEIVER

FOUR POSITION BATTERY SWITCH

1. Economy – Internal Batteries.
2. Normal – Internal Batteries.
3. Receiver ''OFF.''
4. External Batteries.

FOR OPERATION FROM:

1.5 volt ''A'' battery and
90 volts ''B'' battery. (Two 45 volt ''B'' batteries connected in series.)

BATTERY CONSUMPTION:

Internal Batteries:–ECONOMY–	''A'' Battery.	300 mA.
	''B'' Battery.	8.5 mA.
Internal Batteries:–NORMAL–	''A'' Battery.	300 mA.
	''B'' Battery.	13 mA.
External Batteries:–	''A'' Battery.	300 mA.
	''B'' Battery.	13 mA.

TUNING RANGE:

535 to 1620 Kilocycles. 560.7 to 185.18 Metres.

INTERMEDIATE FREQUENCY:

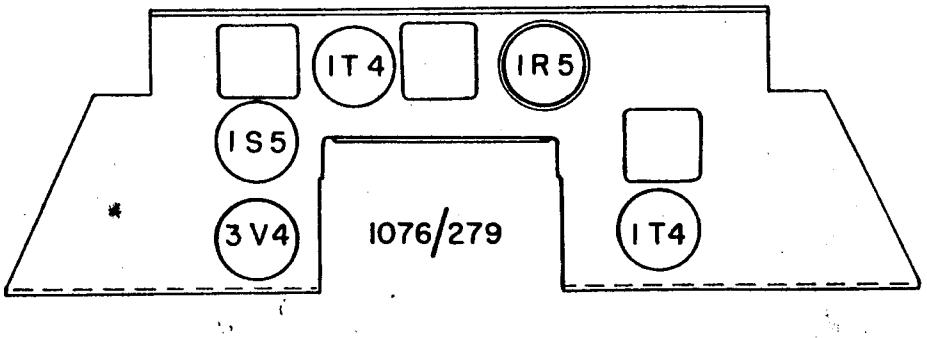
455 Kc/s.

POWER OUTPUT:

250 milliwatts (max.).
100 milliwatts (undistorted).

THIS BULLETIN CONTAINS:

1. Technical Data.
2. Alignment Procedure.
3. Circuit Diagram.
4. Component Parts List.
5. I.F. and R.F. Transformer Connections.
6. Instructions for fitting New Batteries.
7. Operation from External Batteries.
8. Cleaning Agent for Plastic Cabinet.
9. External Aerial and Earth Connections.
10. Storage when out of use.
11. Chassis Serial Number.
12. Alignment Template.
13. Dial Readings.



ALIGNMENT INSTRUCTIONS:

EQUIPMENT	ALIGNMENT CONDITIONS
Signal Generator:	Load Impedance: 10,000 ohms.
Output Meter:	Output Level: 25 milliwatts.
	Volume Control: Max. vol. (fully clockwise).
Mica Capacitor: 0.01MF (part No. PC145) for I.F.T. Alignment.	''A'' Battery: 1.5 volts.
	''B'' Battery: 90 volts (two 45 volt ''B'' batteries connected in series).
Alignment Tools: Part No. PM581 and M195.	Intermediate Freq.: 455 Kc/s.

TO REMOVE CHASSIS FROM CABINET: Turn receiver battery/off switch to the ''OFF'' position.

Remove the dial pointer centre tuning push-on knob by pulling it straight off the tuning control spindle. Remove volume control and ON/OFF switch knobs. Unscrew and remove two screws through top ridge of cabinet, then from top of cabinet prise rear section of cabinet away from front section. Remove small plugs from battery sockets, then remove the batteries. Disconnect from speaker the lead connecting speaker frame to chassis.

The chassis is held in the cabinet by a ¼" x 5/32" Whit. screw and nut at each end of the chassis. Loosen off these two screws, withdraw speaker lead plug from socket on chassis, then lift the chassis out of the cabinet.

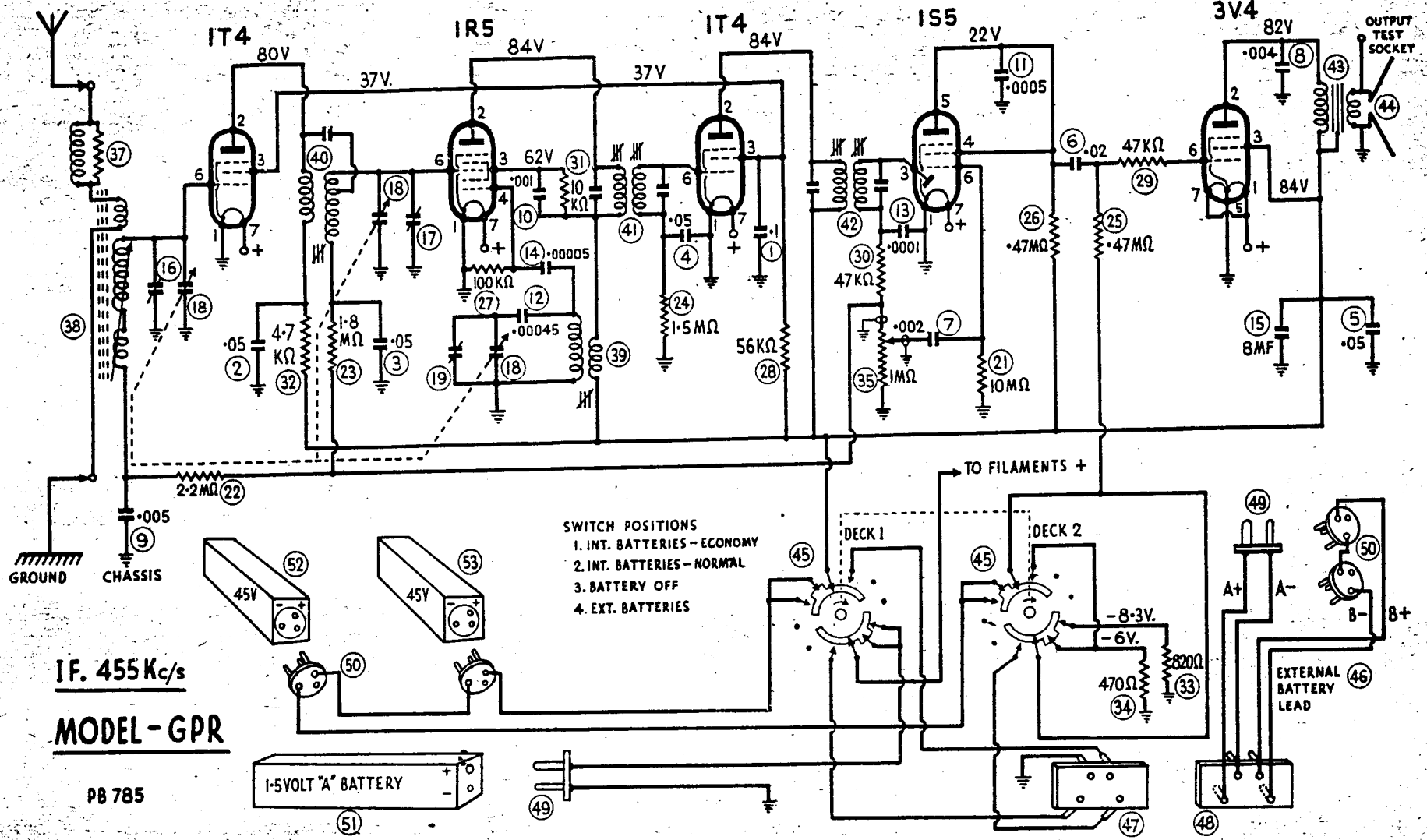
Opera-tion.	Generator connection.	Generator Frequency.	Dummy Antenna.	Instructions.
1.	The wire connecting the speaker frame to the receiver chassis which was disconnected when removing the chassis from the cabinet is to be reconnected during alignment of the receiver.			
2.	To control grid of IT4 IF valve (pin No. 6)	455 Kc/s.	0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd IF trans. pri. and sec. for max. output.
3.	To control grid of IR5 valve (pin No. 6).	455 Kc/s.	0.01MF 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.
4.	Repeat operations No. 2 and 3.			
5.	ALIGNMENT TEMPLATE: A cardboard alignment template part No. PB 758 is available from the factory. The template may be made by using the diagram on page 10 and fastening it to a piece of cardboard.			
6.	DIAL POINTER SETTING: Fit alignment jig to chassis, then fit push-on pointer-tuning knob to tuning spindle. Fully mesh cond. gang plates and set centre of dial pointer on centre of end of travel spot on template near 540 Kc/s.			
7.	To inject a signal into the receiver rod aerial connect to the active terminal of the signal generator approx. 2 ft. of aerial wire, then fashion the wire into a pertical position.			

8. Place receiver chassis in a horizontal position with the rod aerial uppermost and so that the fixed primary winding end of the rod aerial points to the 2 ft. of aerial wire attached to the generator and so that the fixed primary winding is not closer than 2 ft. from the 2 ft. of aerial wire.

9.	Refer para. 7 and 8. 600 Kc/s.	Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. mark on dial template. Leave the cond. gang and dial pointer set in this position and peak osc. coil ind. trim. (iron core) and then from the base of the RF trans. peak the RF. trans. ind. trim. (iron core). Also peak for max. output the secondary trimmer coil on the ferrite rod by sliding the trimmer coil along the aerial rod.
10.	Refer para. 7 and 8. 1400 Kc/s.	Turn cond. gang and dial pointer until centre of pointer is on 1400 Kc/s. dial mark on template. Adjust osc. coil trim. cond. for logging and peak RF trans. trim. cond., then rod aerial trimmer cond. for max. output.
11.	Refer para. 7 and 8. 600 Kc/s.	Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. mark on dial template. Leave the gang and dial pointer set in this position. Repeak osc. coil ind. trim. (iron core) RF. trans. ind. trim. (iron core) and the secondary trim. coil on the ferrite rod. Do not rock the gang to and fro through the signal while adjusting the trimmers or move the dial pointer off 600 Kc/s. dial template mark until after the ind. trimmer of these three coils has been peaked for max. output.
12.	Refer para. 7 and 8. 1400 Kc/s.	Turn cond. gang and dial pointer until centre of dial pointer is on 1400 Kc/s. mark on dial template. Adjust oscl. coil trim. cond. for logging and peak RF trans. and ferrite rod aerial trimmer conds. for max. output.

13. Refit receiver chassis to cabinet in the exact reverse procedure to removing it.

TUNING RANGE AFTER ALIGNMENT, 535 to 1620 Kc/s.



VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A DC. VACUUM TUBE VOLTMETER – NO SIGNAL – OPERATING FROM INTERNAL BATTERIES AND WITH FUNCTION SWITCH IN "NORMAL" POSITION. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS – LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED – IF A V.T.V.M. IS NOT USED – DEPENDING ON THE RESISTANCE OF THE METER USED :– E.G. 1000 Ω/VOLT OR 20000 Ω/VOLT

Circuit No.	Description	Tol. ±	Rating	Part No.
1.	.1MF Paper Condenser	20%	200V. DCW	PC218
2.	.05MF Paper Condenser	20%	200V. DCW	PC102
3.	.05MF Paper Condenser	20%	200V. DCW	PC102
4.	.05MF Paper Condenser	20%	200V. DCW	PC102
5.	.05MF Paper Condenser	20%	200V. DCW	PC102
6.	.02MF Paper Condenser	20%	400V. DCW	PC111
7.	.002MF Paper Condenser	20%	600V. DCW	PC112
8.	.004MF Paper Condenser	20%	600V. DCW	PC221
9.	.005MF Mica Condenser	10%	1000 VT	PC249
10.	.001MF Mica Condenser	10%	1000 VT	PC108
11.	.0005MF Mica Condenser	10%	1000 VT	PC144
12.	.00045MF Mica Condenser	2½%	1000 VT	PC727
13.	.0001MF Mica Condenser	10%	1000 VT	PC110
14.	.00005MF Mica Condenser	10%	1000 VT	PC141
15.	8MF Electrolytic Condenser	20%	350 PV	PC280
16.	1.5-15MMF Trimmer Cond.			PC928
17.	1.5-15MMF Trimmer Cond.			PC928
18.	3 Gang. Var. Cond. with gears attached			PC985
19.	3-30MMF WW. Trimmer Cond.			PC663
20.				
21.	10 Megohm Carbon Resistor	15%	½ W.	R1063
22.	2.2 Megohm Carbon Resistor	15%	½ W.	R2253
23.	1.8 Megohm Carbon Resistor	15%	½ W.	R1853
24.	1.5 Megohm Carbon Resistor	15%	½ W.	R1553
25.	.47 Megohm Carbon Resistor	15%	½ W.	R4743
26.	.47 Megohm Carbon Resistor	10%	½ W.	R4742
27.	100,000 Ohm Carbon Resistor	10%	½ W.	R1042
28.	56,000 Ohm Carbon Resistor	10%	1 W.	Z5632
29.	47,000 Ohm Carbon Resistor	15%	½ W.	R4733
30.	47,000 Ohm Carbon Resistor	15%	½ W.	R4733
31.	10,000 Ohm Carbon Resistor	10%	½ W.	R1032
32.	4,700 Ohm Carbon Resistor	10%	½ W.	R4722
33.	820 Ohm Carbon Resistor	10%	1 W.	Z8212
34.	470 Ohm Carbon Resistor	10%	1 W.	Z4712
35.	1 Megohm Carbon Potentiometer	20%		PR844
36.				
37.	Loading Coil			PT942
38.	Ferrite Rod Aerial			L120
39.	Oscl. Coil			PT860
40.	RF Transformer			PT890-1
41.	No. 1 IF. Transformer			PT864-2
42.	No. 2 IF. Transformer			PT869-3
43.	Speaker Input Trans. 10,000-3.5 Ohms imped. Code No. KCB57			PT916
44.	5" Permag. Speaker type 5F Cone type F91			K181
45.	On/Off Battery Switch			S204
46.	External Battery Lead			PA490
47.	4 Pin Socket on receiver			A104/814
48.	4 Pin Plug on external battery lead			A105/814
48.	Plug Cover			285/81
49.	"A" Battery Lead Plug			336/30C
50.	"B" Battery Lead Plug			335/30C
51.	1.5 Volt "A" Battery			M129
52.	45 Volt "B" Battery			M130
53.	45 Volt "B" Battery			M130

Dial Reading N.S.W.	17/814-2
Dial Reading Vic.-Tas.	17/814-3
Dial Reading Qld.	17/814-4
Dial Reading S.A.-W.A.	17/814-5
Dial Cover - clear circular plate	276/81
Dial Cover Mt. Screws (2) ¼" x ⅛" Csk. Hd.	11/560-2
Dial Mt. Plate - metal - into which screws fasten	28/814
Four Pin Socket Assy. - speaker, ext. battery and aerial and earth	A104/814
Four Pin Plug Assy. - less cover speaker lead	A105/814
Four Pin Plug Assy. Cover	285/81
Baffle Board - cardboard speaker	7/814
Clip (2) holds front to rear at cab. base	12/814
Cabinet Top Ridge Fastening Stud - female	13/814
Cabinet Top Ridge Fastening Stud - male	16/814
Mount Pillar (2) holds ends of rod aerial	278/81
External Aerial and Earth Plugs	11/252
Clips IF Trans. mount	7/670
Valve Shield	38/635
Grommet - rubber - gang mount	64/30A
7 Pin Socket - flange mount (4)	A104/58
7 Pin Socket - rubber mount (1)	A104/58-1
Rubber Base - socket mount	2/681
Brass Rivet (2) socket-rubber base mt.	9/681
Tuning Knob - less pointer	274/81-5
Tuning Knob Pointer - force fit on knob	275/81
Tuning Knob Insert - moulded	277/81
Knob Circlip (3)	161/81
Earth Transfer ''E''	30/245
Aerial Transfer ''A''	29/245
Speednut 3/16" int.	291/250
Plastic Bag - fits over cabinet	1103/279
Volume Knob	273/81-5
ON/OFF Switch Knob	273/81-25
Insert - moulded - vol. and ON/OFF switch knob	280/81
Handle Slide - stepped section, mouldings through which handle slides	282/81
Handle Slide Cover - flat section, mouldings through which handle slides	281/81
Screw ½" x 5/32" Whit. Rd. Hd. chassis to cab. mt.	16/560-10
Nut 5/32" Whit. hex.	3/478-4
Plate - metal - chassis mount screw	27/814

STYLING LIST:

	BROWN	MAROON	IVORY	L. GREY
Cabinet Front	262/81-1	262/81-2	262/81-5	262/81-6
Cabinet Back	263/81-1	263/81-2	263/81-5	263/81-6
Badge ''Astor''	498/30C-18	498/30c-18	498/30c-17	498/30c-17
Handle Assy. complete	A103/814-1	A103/814-2	A103/814-5	A103/814-6
Handle	10/814	10/814	10/814	10/814
Handle Grip	283/81-1	283/81-2	283/81-5	283/81-6
Name Plate	284/81	284/81	284/81	284/81

Grip Mount Screws 5/16" x ⅛" oval Csk. Hd. screw	11/203-6
⅛" Whit. nut	3/478-2
Name Plate Screws ¼" x ⅛" Cs/k. Hd.	11/560-2

ROD AERIAL CONNECTIONS:

PRIMARY (5 turns - fixed winding)

Lead from end turn, nearest to end of rod – EXTERNAL GROUND SOCKET.
Lead from end turn, next to secondary - AERIAL LOADING COIL.

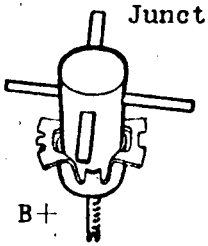
SECONDARY (fixed winding).

Lead from end turn next to fixed primary – GRID.
Lead from end turn next to sec. trim. coil – A JUNCTION LUG FOR THIS LEAD AND THE LEAD FROM SEC. TRIM. COIL.

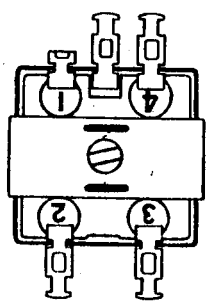
SECONDARY TRIM COIL (moveable winding)

Lead from end turn next to fixed secondary - A JUNCTION LUG FOR THIS LEAD AND THE LEAD FROM SEC. END TURN NEXT TO TRIMMER COIL.
Lead from end turn nearest to end of rod – AVC.

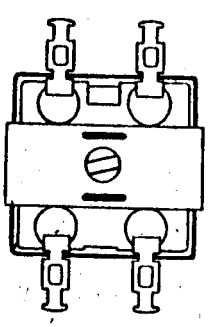
OSCL. COIL



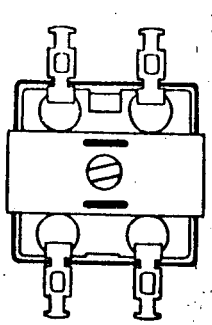
RF. TRANS.



No. 1 IF. TRANS.



No. 2 IF. TRANS.

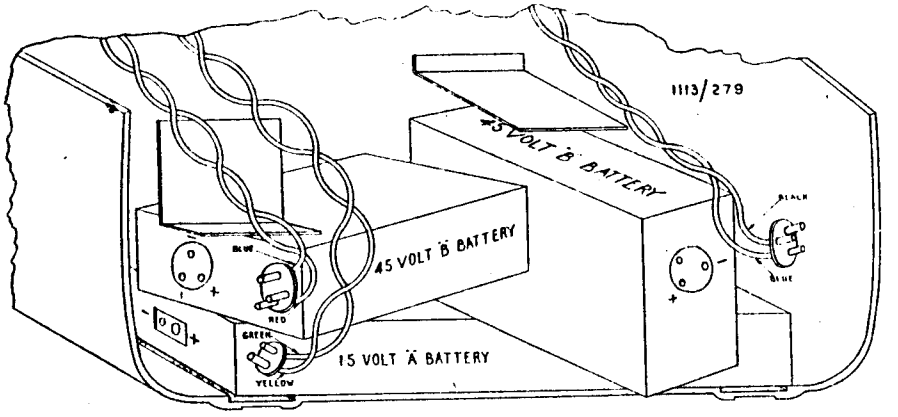


BATTERY REPLACEMENT (refer diagram):

The internal batteries used are one 1.5 volt ''A'' battery and two 45 volt ''B'' batteries. When connecting new batteries, follow the instructions exactly. If a mistake is made all the valves are liable to be burned out.

1. Make sure the receiver is switched off.
2. Remove the rear section of the cabinet by unscrewing the two screws through the top ridge of the cabinet.

3. Lay the receiver, speaker grille downwards on a flat surface, then withdraw the plugs from the batteries.
4. Fit the new batteries, using strips of cardboard as packers to overcome any looseness.
5. Insert the small plugs into the sockets in the new batteries, then refit the rear section of the cabinet.



CHASSIS SERIAL NUMBER:

The serial number is stamped on the left hand end of the metal chassis, and is visible when the rear of the cabinet is removed by unscrewing the two screws through the top ridge of the cabinet.

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. Swith the receiver off.
2. Obtainable from the factory is a 3 ft. extension lead part No. PA490. The small plugs on this lead are plugged into their respective sockets on the heavy-duty batteries. The four pin plug on the end of the extension lead is inserted into the four pin socket in the small recess in the rear of the cabinet. The four pin socket is in the small recess on the left of the cabinet when viewing it from the rear.
3. The receiver may now be switched on by turning the battery/off switch on the front of the cabinet to the position marked EXT. BATT. No current is being consumed from the internal batteries when operating from the external batteries.
4. 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.

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. When the batteries are left in the receiver for frequent use as a portable it is advisable to check them about every three months for swelling and corrosion.

CLEANING AGENT FOR PLASTIC CARRYING CASE:

WARNING: The plastic sections of the 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 Car-Pol or Embex car polish.

EXTERNAL AERIAL:

On the rear of the receiver cabinet at the right is a small recess in which are two holes.

Insert the end of the aerial 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 aerial and earth leads, provide an easy and mechanically sound connection to the sockets for the external aerial and earth.

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

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

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 aerial lead.

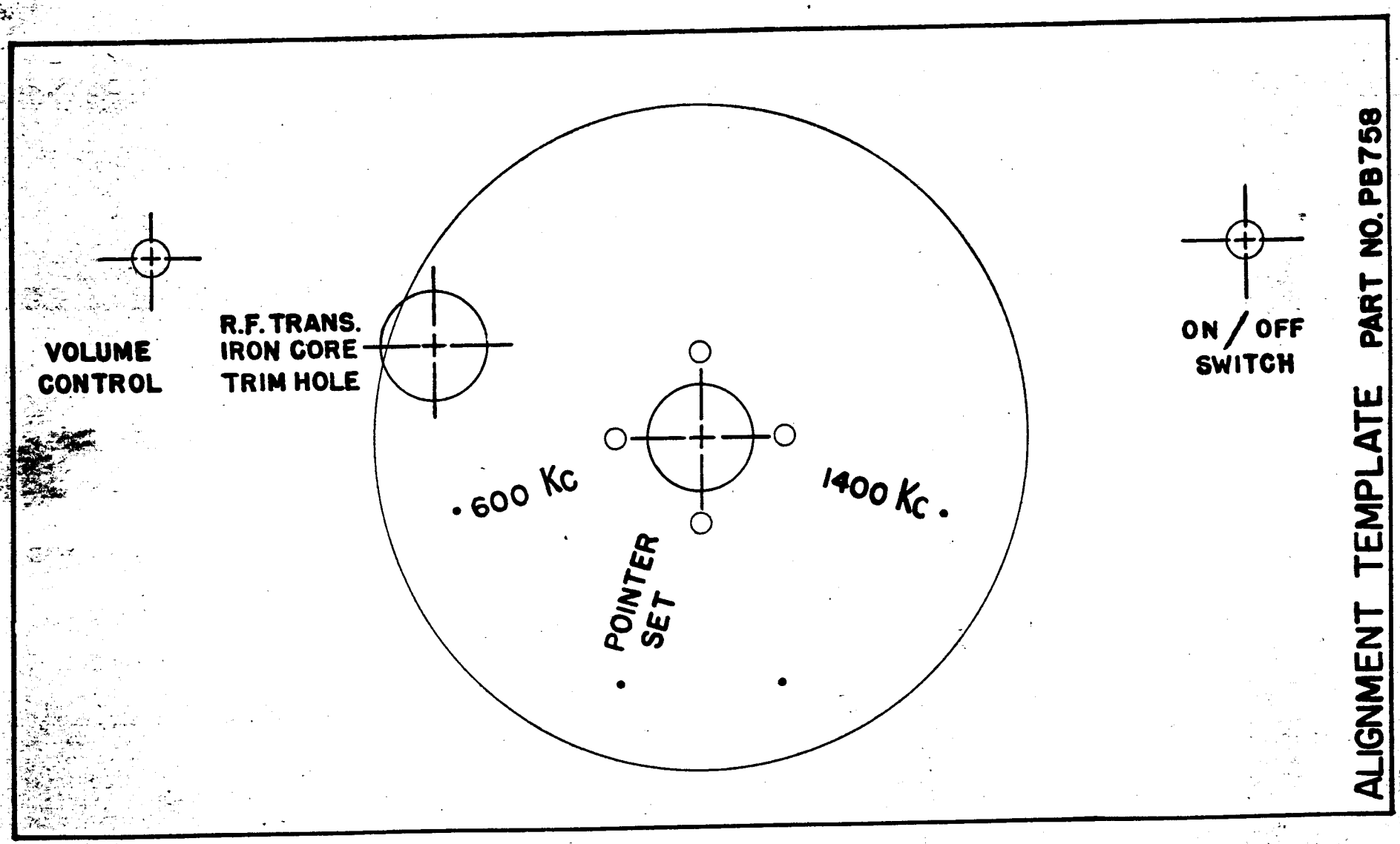
Viewing the receiver from the rear with the handle uppermost the small socket hole at the right is for the external aerial and the small socket hole at the left is for the external earth connection.

DIAL READING:

Supplied with each receiver are four dial readings and for safe keeping are fastened behind the dial on the front of the cabinet. These dial readings show the major stations in each State in large letters and other stations within a reasonable reception distance in small letters.

Should the receiver be taken to another State the dial may be easily changed as detailed below.

1. Make sure receiver is switched ''OFF''.
2. Pull pointer tuning knob straight off tuning spindle.
3. Unscrew two screws near centre of clear dial cover, then remove clear dial cover and dial readings behind it.
4. On to small pegs on rear of clear dial cover, fit required dial reading, then fit surplus dial readings.
5. Refit screws through clear dial cover and dial readings, then fasten them on to the receiver.
6. Refit pointer tuning knob.


VOLUME CONTROL
R.F. TRANS. IRON CORE TRIM HOLE
600 Kc
1400 Kc
POINTER SET
ON / OFF SWITCH
ALIGNMENT TEMPLATE PART NO. PB758