

RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.
124-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN: ANP-1

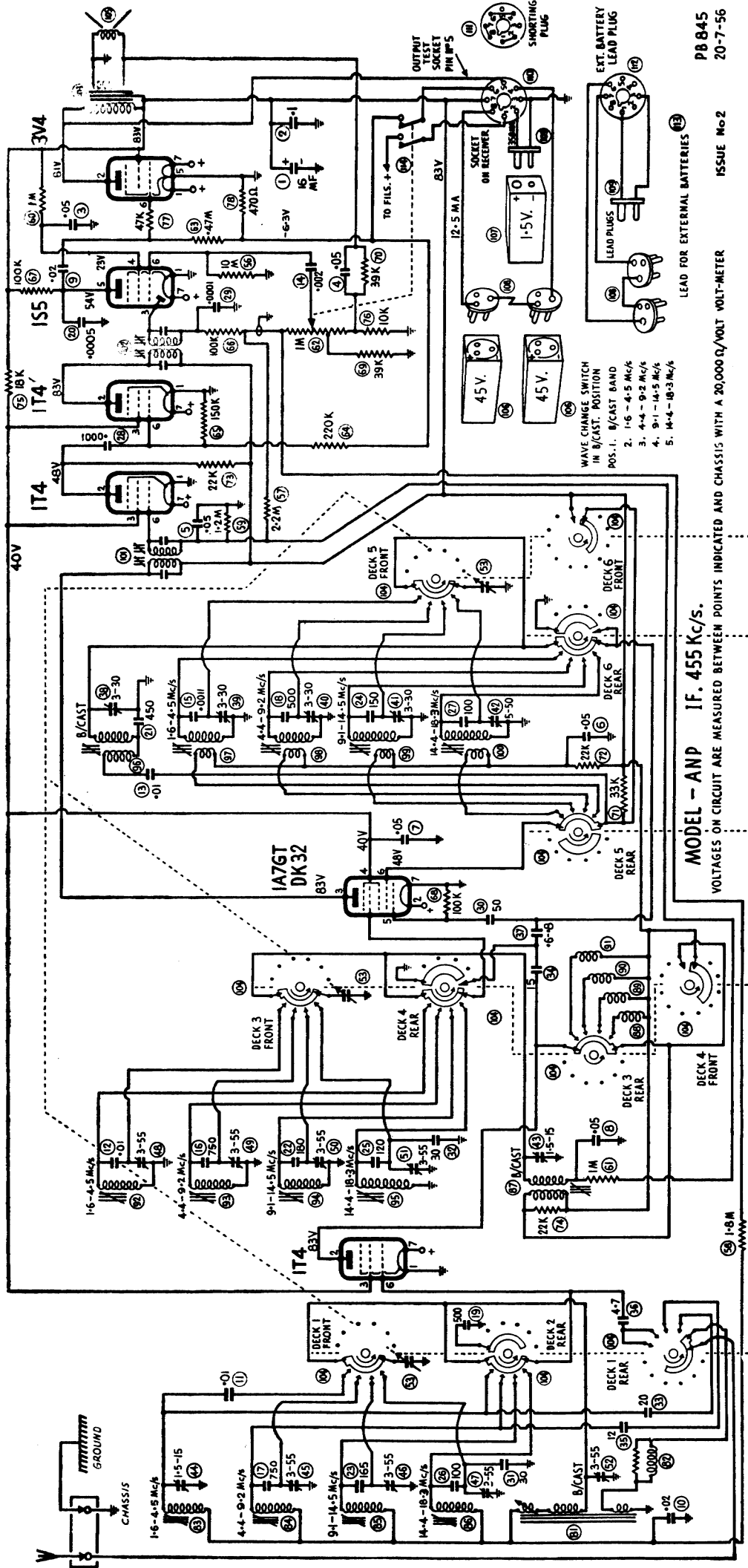
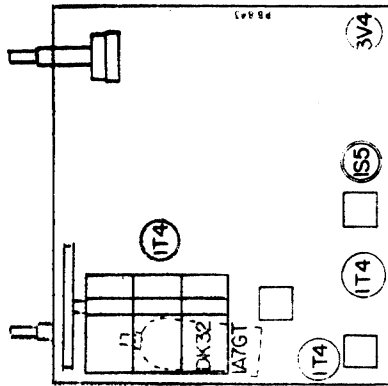
File: Receivers
Portable

Date: 3-8-56

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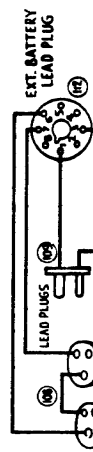
MODEL "ANP"

6 VALVE SUPERHETERODYNE 5 BAND PORTABLE RECEIVER



MODEL - ANP IF. 455 Kc/s.
VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A 20,000 Ω/VOLT VOLT-METER

LEAD FOR EXTERNAL BATTERIES



ALIGNMENT INSTRUCTIONS

EQUIPMENT		ALIGNMENT CONDITIONS	
Signal generator:		Load impedance:	10,000 ohms
Output meter:		Output level	25 milliwatts
Alignment tools:	Part No. M195 & PMS81	'A' battery	1.5 volts
Mica capacitor:	0.01 MF for I.F. trans alignment	'B' battery	90 volts
Dummy antenna	400 ohm non-inductive resistor	Vol. control	max. volume (fully clockwise)
Alignment template:	Part No. PB832	Intermed. freq.	455 Kc/s.

TO REMOVE CHASSIS FROM CABINET

Pull control knobs straight upward of control spindles. 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. Re-fitting the chassis to the cabinet is the exact reverse procedure to removing it.

I.F. TRANS. ALIGNMENT

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.				Fasten the dial reading off the cabinet on to the cardboard alignment template PB832 with $\frac{3}{8}$ " x $\frac{3}{8}$ " screws and nuts, then fit alignment template in position on top of chassis with the four screws which fasten the chassis to the cabinet. Fit control knobs to control spindles.
2.	To signal grid of IFT4 IF valve (pin No. 6)	455 Kc/s.	.01 MF mica capacitor in band position. Leave grid wire series with generator	Turn wave change switch to b/cast attached to valve socket. Peak 2nd IFT Pri. and sec. for max. output.
3.	To signal grid	455 Kc/s.	.01 MF mica capacitor in mesh. Leave grid wire attached to generator	Turn cond. gang plates fully out of Peak 1st IFT pri. and sec. for max. output.
4.	Repeat operations Nos. 2 and 3.			

BROADCAST BAND ALIGNMENT

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.				To inject a signal into the receiver rod aerial for alignment of the broadcast band, connect to the active terminal of the signal generator output approx. 2 ft. of aerial wire, then fashion the wire into a vertical position.
2.				Place receiver chassis with ferrite rod aerial attached so that the receiver dial is uppermost and the ferrite rod is horizontal and nearest to the operator. Move the chassis to a position so that the fixed primary winding end of the rod aerial points to the 2 ft. of aerial wire attached to the generator output, and so that the fixed primary winding is not closer than 2 ft. from the 2 ft. of aerial wire.
3.				Place the 'B' batteries in their respective positions at the ends of the chassis to provide the same amount of mass around the chassis as exists when fitted into the cabinet.
4.	Refer para. 1 and 2	1470 Kc/s		Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. dial mark. Leave the cond. gang and dial pointer set in this position and peak the b/cast band oscil. coil inductance trim. (iron core) and the b/cast band RF trans. ind. trim. (iron core) from the base end of the trans. also peak for max. output the secondary trimmer coil on the ferrite rod. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 600 Kc/s. dial mark until after the inductance trimmers and the rod trimmer coil have been peaked for max. output.
5.	Repeat operations Nos. 3 and 4.			Turn cond. gang and dial pointer until centre of dial pointer is on 1470 Kc/s. dial mark. Adjust b/cast band oscil. coil trim. cond. for logging and peak b/cast band RF trans and ferrite rod trim. conds. for max. output.

SHORT-WAVE BAND ALIGNMENT 1.6-4.5 Mc/s.

(This band is to be aligned before the higher frequency shortwave bands).

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To receiver external aerial and earth sockets	1.7 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 1.6-4.5 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 1.7 Mc/s. Mark on dial. Leave the cond. gang and dial pointer set in this position and peak 1.6-4.5 Mc/s. band oscil. coil ind. trim. (iron core) and the 1.6-4.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output.

DIAL POINTER SETTING

Fully mesh condenser gang plates and set centre of dial pointer on centre of end of travel mark on dial reading near 540 Kc/s.

2. To receiver external aerial and earth sockets
4.2 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 4.2 Mc/s. dial mark. Adjust 1.6-4.5 Mc/s. band oscil. coil trim. cond. for logging, then peak 1.6-4.5 Mc/s. band antenna and RF trans. trim. cond. for max. output.
3. To receiver external aerial and earth sockets
1.7 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 1.7 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position. Repeat 1.6-4.5 Mc/s. band oscil. coil ind. trim. (iron core) then peak the 1.6-4.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 1.7 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4. To receiver external aerial and earth sockets
4.2 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 4.2 Mc/s. mark on dial. Readjust 1.6-4.5 Mc/s. band oscil. coil trim cond. for logging, then repeat 1.6-4.5 Mc/s. band antenna and RF trans. trim. condensers for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds. Check tracking at 3 Mc/s.
5. To receiver external aerial and earth sockets
3 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 3 Mc/s. dial mark. Adjust 1.6-4.5 Mc/s. band oscil. coil trim. cond. for logging, then repeat 4.4-9.2 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. condensers. Check tracking at 6.5 Mc/s.

SHORT-WAVE BAND ALIGNMENT 4.4-9.2 Mc/s.

1. To receiver external aerial and earth sockets
4.5 Mc/s. 400 ohm non-inductive resistor
Turn wave change switch to 4.4-9.2 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 4.5 Mc/s. mark on dial. Leave cond. gang and dial pointer set in this position and peak the 4.4-9.2 Mc/s. band oscil. coil ind. trim. (iron core) and the 4.4-9.2 Mc/s. band antenna and RF trans. ind. trim (iron cores) for max. output.

2. To receiver external aerial and earth sockets
9 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 9 Mc/s. dial mark. Adjust 4.4-9.2 Mc/s. band oscil. coil trim. cond. for logging, then peak 4.4-9.2 Mc/s. band antenna and RF trans. trim. condensers for max output.

3. To receiver external aerial and earth sockets
4.5 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 4.5 Mc/s. dial mark. Leave cond. gang and dial pointer set in this position. Repeat 4.4-9.2 Mc/s. band oscil. coil ind. trim. (iron core) then peak the 4.4-9.2 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang or dial pointer to and fro through the signal while adjusting or move them off the 4.5 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.

4. To receiver external aerial and earth sockets
9 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 9 Mc/s. dial mark. Readjust 4.4-9.2 Mc/s. band oscil. coil trim. cond. for logging, then repeat 4.4-9.2 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. condensers. Check tracking at 6.5 Mc/s.

5. To receiver external aerial and earth sockets
6.5 Mc/s. 400 ohm non-inductive resistor
Turn wave change switch to 9.1-14.5 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position, and peak the 9.1-14.5 Mc/s. band oscil. coil ind. trim. (iron core) and the 9.1-14.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output.

SHORT-WAVE BAND ALIGNMENT 9.1-14.5 Mc/s.

1. To receiver external aerial and earth sockets
9.6 Mc/s. 400 ohm non-inductive resistor
Turn wave change switch to 9.1-14.5 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position, and peak the 9.1-14.5 Mc/s. band oscil. coil ind. trim. (iron core) and the 9.1-14.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output.

2. To receiver external aerial and earth sockets
14.2 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 14.2 Mc/s. dial mark. Adjust 9.1-14.5 Mc/s. band oscil. coil trim. cond. for logging, then peak 9.1-14.5 Mc/s. band ant. and RF trans. trim. conds. for max. output.
3. To receiver external aerial and earth sockets
9.6 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark.
Leave the cond. gang and dial pointer set in this position and repeak the 9.1-14.5 Mc/s. band oscil. coil ind. trim. (iron core) and the 9.1-14.5 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output.
Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 9.6 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4. To receiver external aerial and earth sockets
14.2 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 14.2 Mc/s. mark on dial. Readjust 9.1-14.5 Mc/s. band oscil. coil trim. cond. for logging, then repeak 9.1-14.5 Mc/s. band antenna and RF trans. trim. conds. for max. output.
Rock the cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
Check tracking at 11.8 Mc/s.
5. To receiver external aerial and earth sockets
11.8 Mc/s. 400 ohm non-inductive resistor
Check tracking at 11.8 Mc/s.

SHORT-WAVE BAND ALIGNMENT 14.4-18.3 Mc/s.

1. To external aerial and earth sockets
15.2 Mc/s. 400 ohm non-inductive resistor
Turn wave change switch to 14.4-18.3 Mc/s. band position. Turn. cond. gang and dial pointer until centre of dial pointer is on 15.2 Mc/s. mark on dial.
Leave the cond. gang and dial pointer set in this position and peak the 14.4-18.3 Mc/s. band oscil. coil ind. trim. (iron core) and the 14.4-18.3 Mc/s. band antenna and RF trans. ind. trimmers (iron cores) for max. output.

2. To external aerial and earth sockets
18 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 18 Mc/s. dial mark. Adjust 14.4-18.3 Mc/s. band oscil. coil trim. cond. for logging, then peak 14.4-18.3 Mc/s. band antenna and RF trans. trim. conds. for max. output.
3. To external aerial and earth sockets
15.2 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 15.2 Mc/s. dial mark.
Leave the cond. gang and dial pointer set in this position and repeak the 14.4-18.3 Mc/s. band oscil. coil ind. trim (iron core) and the 14.4-18.3 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output.
Do not rock the cond. gang to and fro through the signal or move the dial pointer off 15.2 Mc/s. dial mark until after the ind. trimmer (iron core) of the three coils has been peaked for max. output.
4. To receiver external aerial and earth sockets
18 Mc/s. 400 ohm non-inductive resistor
Turn cond. gang and dial pointer until centre of dial pointer is on 18 Mc/s. mark on dial. Readjust 14.4-18.3 Mc/s. band oscil. trim. cond. for logging, then repeak 14.4-18.3 Mc/s. band antenna and RF trans. trim. conds. for max. output.
Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
Check tracking at 16.2 Mc/s.
5. To receiver external aerial and earth sockets
16.2 Mc/s. 400 ohm non-inductive resistor
Check tracking at 16.2 Mc/s.
6. Remove control knobs and alignment template from the chassis, then refit the chassis to the cabinet.

TUNING RANGE AFTER ALIGNMENT

B/cast band	535-1610 Kc/s.
S/wave bands	1.6- 4.5 Mc/s.
	4.4- 9.2 Mc/s.
	9.1-14.5 Mc/s.
	14.4-18.3 Mc/s.

SHORT-WAVE COIL IDENTIFICATION SPOT COLOURS

1.6- 4.5 Mc/s. band aerial coil (L201)	RED & WHITE	spots on iron core end of former
RF	(L201) RED & WHITE	" " " " " "
Oscil.	" (L200) RED	Spot " " " " " "

16.

4.4- 9.2 Mc/s. band aerial coil (PT913) WHITE	spot on iron core end of former
RF (PT913) WHITE	" " " " " " " "
Oscl. " (L202) WHITE	" " " " " " " "
9.1-14.5 Mc/s. band aerial coil (L204) BLACK & WHITE	spots on iron core end of former
RF (L204) BLACK & WHITE	" " " " " " " "
Oscl. " (L203) BLACK	spot " " " " " " " "
14.4-18.3 Mc/s. band aerial coil (L206) YELLOW & WHITE	spots on iron core end of former
RF (L206) YELLOW & WHITE	" " " " " " " "
Oscl. " (L205) YELLOW	spot " " " " " " " "

NOTE 1: 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.

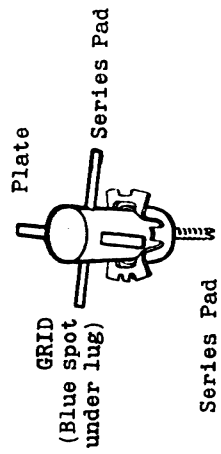
NOTE 2: Check the logging of the shortwave bands on some well known shortwave stations. If a crystal calibrator is available, check the logging at several 100 Kc/s. marks on the dial.

NOTE 3: If the dial pointer does not log correctly after refitting 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 recheck logging.

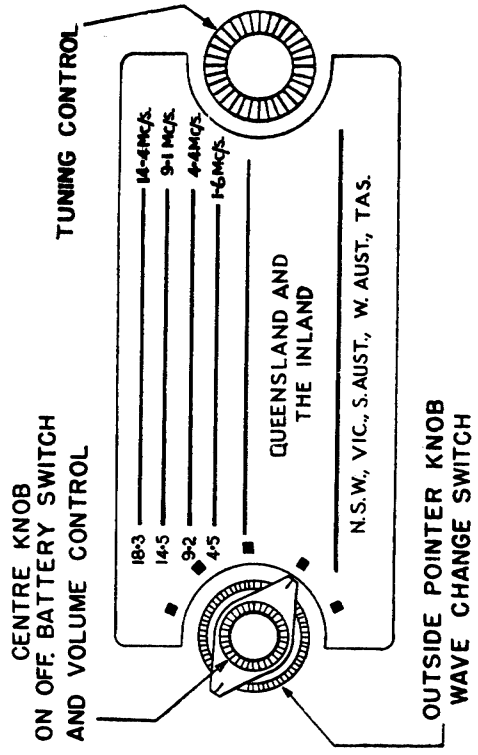
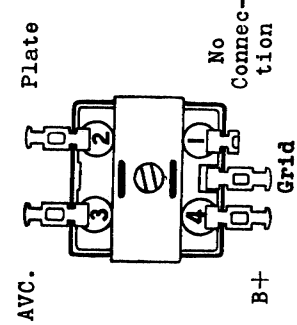
FERRITE ROD AERIAL

- PRIMARY** - (fixed winding 5 turns)
 - Lead from end turn nearest end of rod-
 - Lead from end turn nearest to secondary-
- SECONDARY** - (fixed winding)
 - Lead from end turn nearest to fixed primary-
 - Lead from end turn nearest to sec. trim coil-
- SECONDARY TRIMMER COIL** - (movable winding)
 - Lead from end turn nearest to fixed secondary-
 - Lead from end turn nearest to fixed secondary-
 - END TURN NEAREST SEC. TRIM COIL.
 - AVC.

B/CAST. OSCL. COIL



B/CAST. RF. TRANS.



FOR OPERATION FROM:

- 1.5 volts 'A' Battery and
- 90 volts 'B' Battery (two 45 volt 'B' Batteries in series)

CURRENT CONSUMPTION:

- 'A' Battery 350 milliamps
- 'B' Battery 12.5 milliamps (no signal)

POWER OUTPUT:

- 250 Milliwatts - max.
- 100 Milliwatts - undistorted.

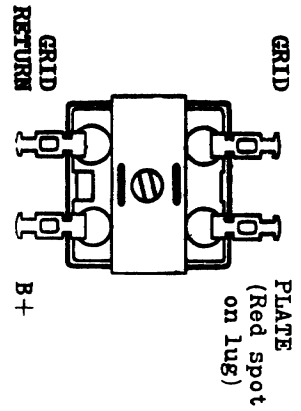
INTERMEDIATE FREQUENCY:

455 Kc/s.

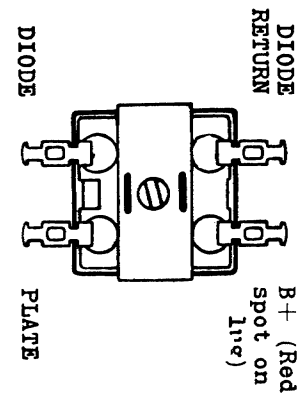
TUNING RANGES:

Broadcast Band:-	535-1610 Kc/s.	560.7 -186.3 Metres
Shortwave	1.6- 4.5 Mc/s.	187.5 - 66.66 Metres
Tuning Ranges	4.4- 9.2 Mc/s.	68.18- 32.60 Metres
	9.1-14.5 Mc/s.	32.96- 20.68 Metres
	14.4-18.3 Mc/s.	20.83- 16.39 Metres

No. 1 IF. TRANS.



No. 2 IF. TRANS.



SHORT-WAVE ANT. TRANS.

Lead from top lug (iron core end):
GRID
Lead from bottom lug (mounting end):
AVC

SHORT-WAVE RF. TRANS.

Lead from top lug (iron core end):
GRID
Lead from bottom lug (mounting end):
CHASSIS

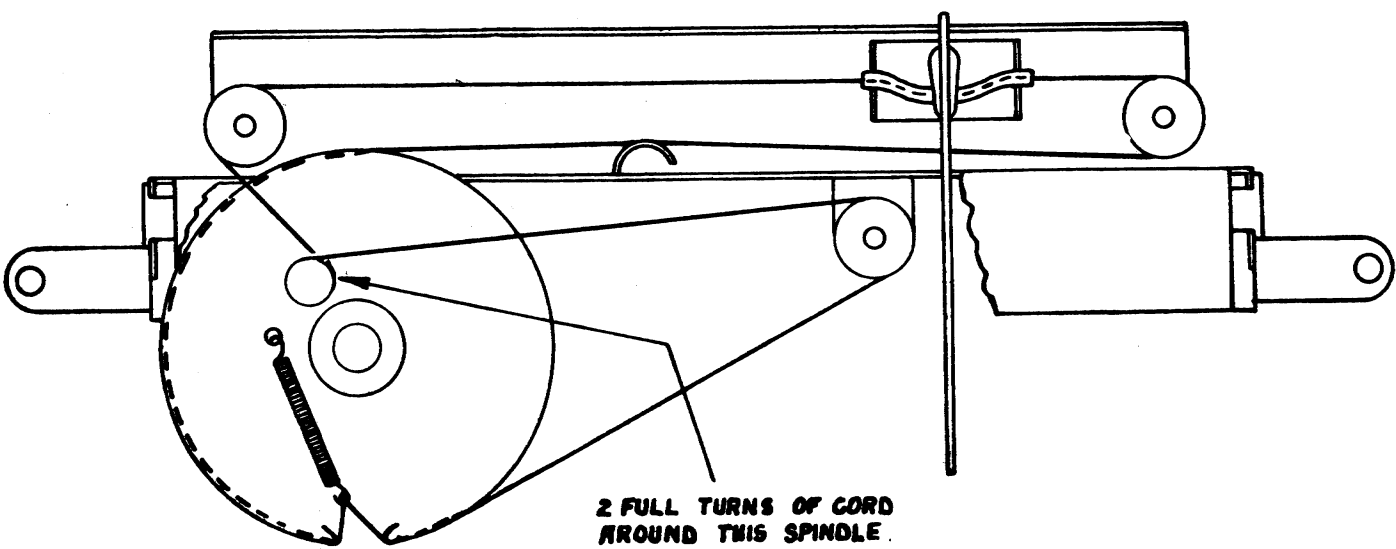
SHORT-WAVE OSC. COILS

SECONDARY—lead from bottom lug (mounting end)—CHASSIS
Lead from top lug (iron core end)—GRID

PRIMARY— lead from bottom lug (mounting end)—OSCL. PLATE
Lead from top lug (iron core end)—JUNCTION OF .05 MF. COND. AND 22K OHM RESISTOR CIRCUIT Nos. 6 AND 72.

RF. AND IF. TRANSFORMERS

- A. The RF transformer part No. PT890 has been changed to an RF. transformer part No. L220. The base connections and method of mounting the transformers are identical.
- B. The 1st IF. transformer part No. PT864 has been changed to an IF. transformer part No. L216. The base connections and method of mounting both transformers are identical.
- C. The 2nd IF. transformer part No. PT869 has been changed to an IF. transformer part No. L218. The base connections and mounting are identical for both types. The IF. transformer L218 has no condensers connected internally; therefore, when using the IF. transformer L218 a 70 MMF tubular ceramic condenser tol. +2%-5% part No. C209 is to be wired across the primary base lugs and a 70 MMF cond. part No. C209 is to be wired across the secondary base lugs. The condensers are to be close to the chassis and the coloured spot end of the condensers is to be wired to the B+ lug of the primary and the AVC - diode return lug of the secondary.



CORDING OF DIAL DRIVE

The length of cord required is 4 ft. 3ins, which includes about 8 in. to spare for tying to the tension spring.
Cord, Part No. 34/754.
Spring, Part No. 8/613.