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

TECHNICAL BULLETIN

BULLETIN-ANR-1
File: RECEIVERS
BATTERY
Date: 10-1-57

MODEL "ANR"

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33-1/3 r.p.m.) and an 8 Valve Superheterodyne Five Band Receiver.

FOR OPERATION FROM:—32 volt D.C. Supply.

CURRENT CONSUMPTION:—

Radio Operation:	0.85 Amps.	(Does not include dial lamps, cabinet indicator lamp or wave band indicator lamp)
,, ,,	1.1 Amps.	(Includes three dial lamps, one cabinet indicator lamp and one wave band indicator lamp all wired in series. Each lamp 6-8V. 0.25 Amp. Part No. PM678.)
Gramo Operation:	1.6 Amps.	(Includes three dial lamps, one cabinet indicator lamp and one wave band indicator lamp.)

INTERMEDIATE FREQUENCY: 455 Kc/s.

TUNING RANGES:

Broadcast Band:-	535-1610 Kc/s.	560.7 -186.3	Metres
Shortwave Tuning Ranges	1.6- 4.5 Mc/s.	187.5 - 66.66	Metres
	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

THIS BULLETIN CONTAINS:

Technical Specifications.
Alignment Procedure.
Circuit Diagram.

Connections for IF and RF Transformers.
Valve Placement Diagram.
Dial Drive Cording Diagram.

CHASSIS SERIAL NUMBER:

1. Open record changer door and remove screw "A" located in record changer compartment – refer diagram on page 12.
2. Pull cabinet receiver door forward to approx. 45° then remove far end of hook-on tension spring from anchor bolt on inside of cabinet.
3. Lower receiver door to a horizontal position and rest the door on a padded stool.
4. The serial number is situated on the top flat section of the chassis at the left end just beneath the cartridge fuse mounted on the lip of the chassis.
5. Refit hook-on tension spring to anchor bolt and refit screw "A."

SHORT-WAVE ANT. TRANS.

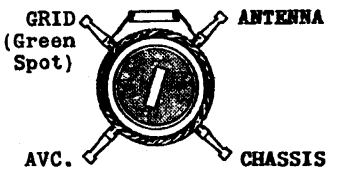
Lead from top lug (iron core end):

GRID

Lead from bottom lug (mounting end):

AVC

ANTENNA TRANS. B/CAST.



SHORT-WAVE RF. TRANS.

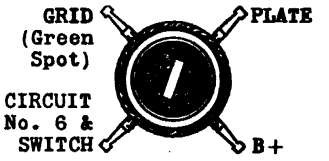
Lead from top lug (iron core end):

GRID

Lead from bottom lug (mounting end):

CHASSIS

RF. TRANS. B/CAST.



SHORT-WAVE OSCL. COILS

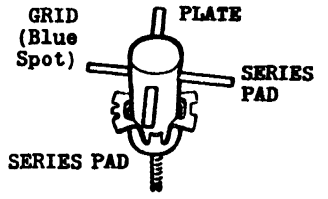
SECONDARY–

lead from bottom lug (mounting end)–CHASSIS
lead from top lug (iron core end)–GRID

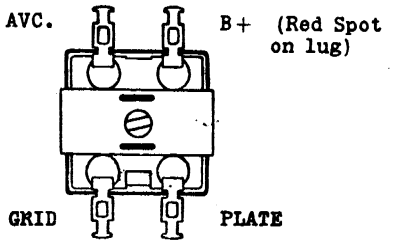
PRIMARY–

lead from bottom lug (mounting end)–OSCL. PLATE
lead from top lug (iron core end)–B+

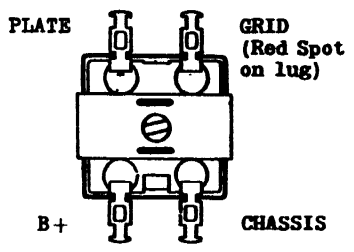
OSCL. COIL B/CAST.



No. 1 IF. TRANS.

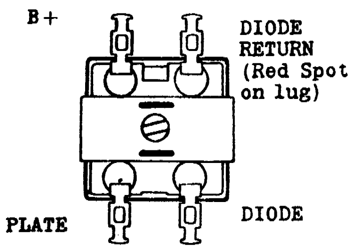


No. 2 IF. TRANS.



ASTOR MODEL ANR.

No. 3 IF. TRANS.



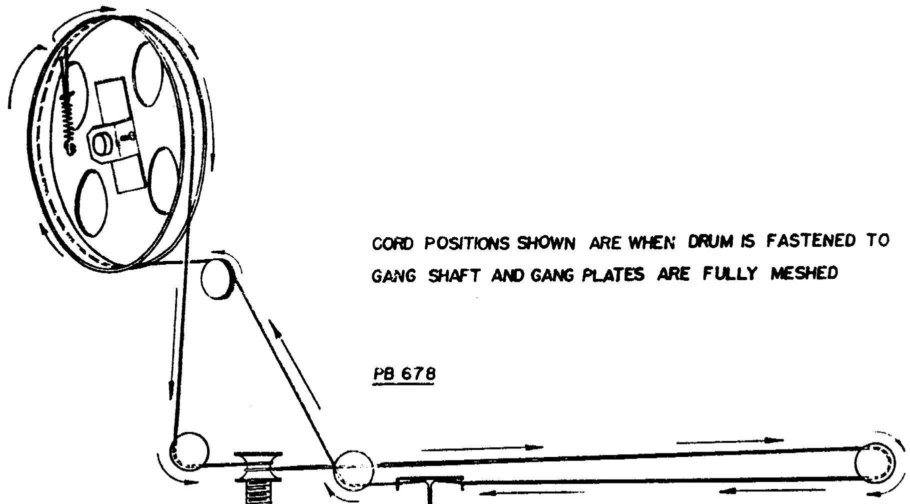
DRIVER TRANS.

PRI. Red - B+
Blue - Plate

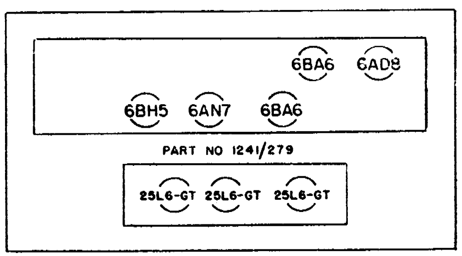
SEC. Yellow- Grid
Red - Chassis
Green - Grid

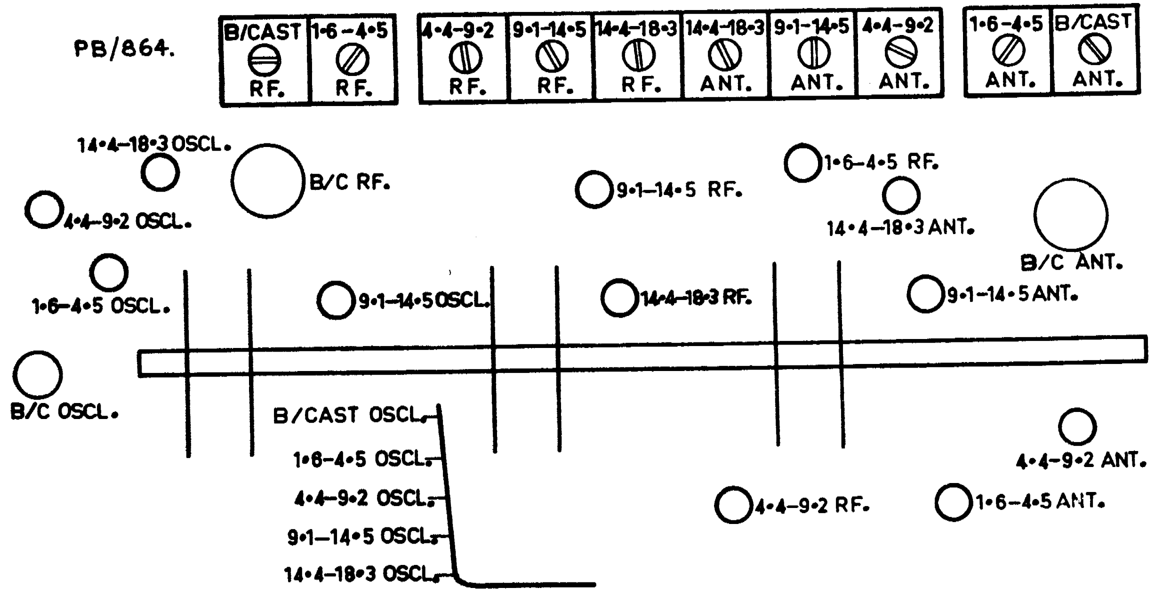
CORDING OF DIAL DRIVE

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. 34/754. Tension Spring part No. 21/698



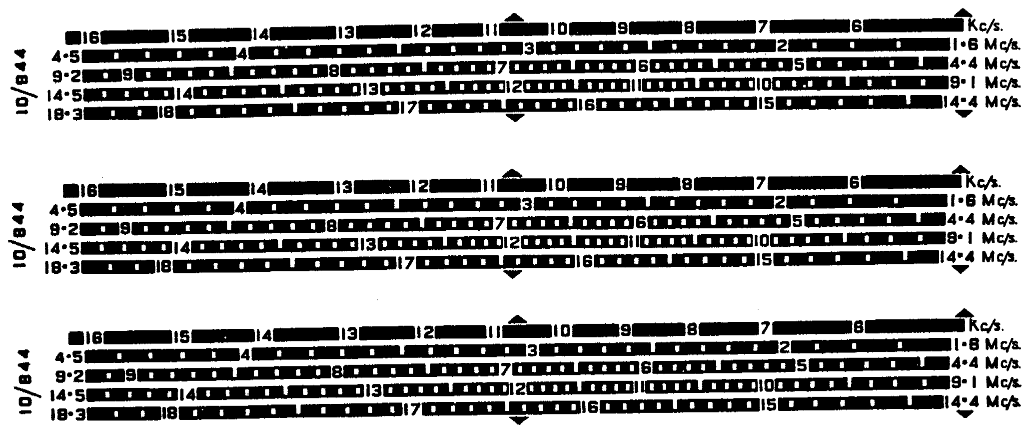
NOTE.—One turn shown around tuning spindle pulley has been increased to two turns.

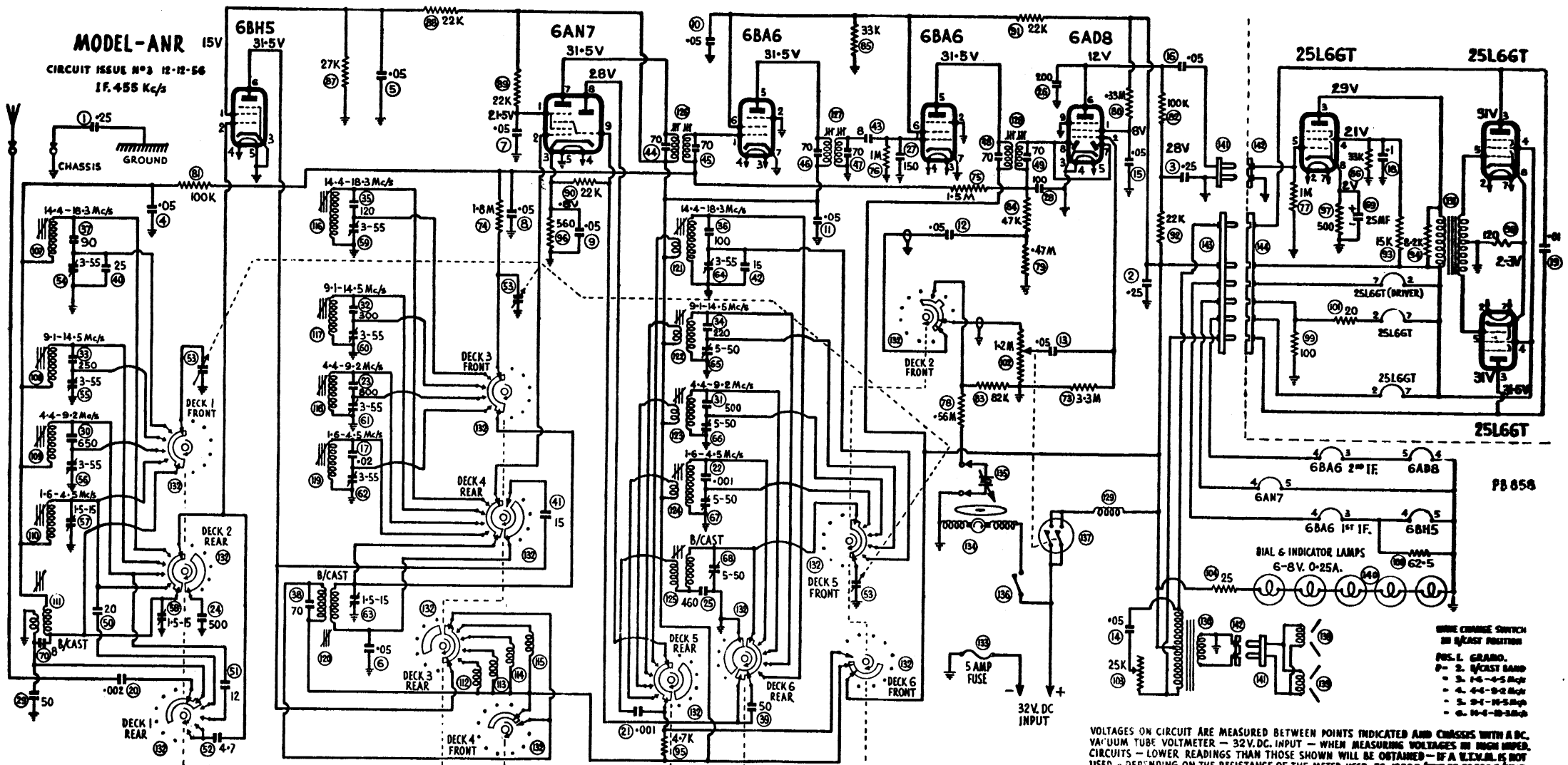




SHORT-WAVE COIL IDENTIFICATION SPOT COLOURS

1.6- 4.5 Mc/s. band	aerial coil	(L201)	RED & WHITE	spots on iron core end of former
,,	RF ,,	(L201)	RED & WHITE	,, ,, ,, ,, ,, ,, ,,
,,	Oscl. ,,	(L221)	BLUE	spot ,, ,, ,, ,, ,, ,,
4.4- 9.2 Mc/s. band	aerial coil	(PT913)	WHITE	spot on iron core end of former
,,	RF ,,	(PT913)	WHITE	,, ,, ,, ,, ,, ,, ,,
,,	Oscl. ,,	(L217)	BROWN	,, ,, ,, ,, ,, ,, ,,
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. ,,	(L222)	VIOLET	spot ,, ,, ,, ,, ,, ,,




MODEL-ANR
CIRCUIT ISSUE N°3 12-12-56
I.F. 455 Kc/s
6BH5
6AN7
6BA6
6BA6
6AD8
25L6GT
25L6GT
25L6GT
CHASSIS
GROUND
DECK 1 FRONT
DECK 1 REAR
DECK 2 REAR
DECK 2 FRONT
DECK 3 FRONT
DECK 3 REAR
DECK 4 REAR
DECK 4 FRONT
DECK 5 FRONT
DECK 5 REAR
DECK 6 REAR
DECK 6 FRONT
B/CAST
5 AMP FUSE
32V. DC INPUT
6BA6 2ND I.F.
6AD8
6AN7
6BA6 1ST I.F.
6BH5
DIAL & INDICATOR LAMPS
6-8V. 0·25A.
PB 858
VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER — 32 V. D.C. INPUT — 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. EG. 1000Ω/VOLT OR 20,000Ω/VOLT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT CONDITIONS:

Load Impedance:	5,000 Ohms
Output Level:	50 milliwatts
Vol. Control:	Max. vol. (fully clockwise).
Tone Control:	Treble position
Intermediate freq.:	455 Kc/s.
DC. Supply:	32 Volt DC. Mains

EQUIPMENT:

Signal Generator	
Output Meter	
Mica Capacitor–	0.01 MFD.
Dummy Antenna–	200MMFD Mica capacitor
Dummy Antenna–	400 Ohm. non inductive resistor
IF. Attenuator–	Part No. M174 (.004MFD and 20K ohm resistor in series)
Alignment tools–	Part No. M195 and PM581

IF. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver chassis from cabinet as detailed on page 12.			
2.	Remove receiver dial background plate from chassis which is fastened by two screws, one at each end.			
3.	To control grid of 6BA6 2nd IF. valve pin No. 1	455 Kc/s.	0.01MFD. mica capacitor in series with generator	Turn wave change switch to B/cast. band. Leave grid wire attached to valve socket. Peak 3rd IF. trans. pri. and sec. for max. output.
4.	To control grid of 6BA6 1st IF. valve pin No. 1	455 Kc/s.	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.
5.	To control grid of 6AN7 valve pin No. 2	455 Kc/s.	0.01MFD mica capacitor in series with generator	Cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.

BROADCAST BAND ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Fasten alignment template (PB862-10/844 refer page 15), with clear adhesive tape into the channel section where the dial pointer slides. The template is to be trimmed along its edges and placed central between the two control spindles and above the pointer base.			
2.	Connect attenuator No. M174 between control grid (pin No. 1) of 2nd 6BA6 IF. valve and chassis.			
3.	Set centre of dial pointer on centre of end of travel mark on dial reading template near 550 Kc/s., cond. gang plates fully meshed.			
4.	To antenna terminal.	600 Kc/s.	200MMFD. 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.	200MMFD. 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.	200MMFD. 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.	200 MMFD. Mica capacitor in series with generator.	Repeat operation No. 5.

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

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

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To antenna terminal	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 oscl. 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.
2.	To antenna terminal	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 oscl. coil trim. cond. for logging, then peak 1.6-4.5 Mc/s. band antenna and RF trans. trim. conds. for max. output.

3.	To antenna terminal	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. Repeak 1.6-4.5 Mc/s. band oscl. 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 antenna terminal	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 oscl. coil trim cond. for logging, then repeak 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.
5.	To antenna terminal	3 Mc/s.	400 ohm non-inductive resistor	Check tracking at 3 Mc/s.

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

1.	To antenna terminal	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 oscl. 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 antenna terminal	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 oscl. 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 antenna terminal	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. Repeak 4.4-9.2 Mc/s. band oscl. 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 antenna terminal	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 oscl. coil trim. cond. for logging, then repeak 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.
5.	To antenna terminal	6.5 Mc/s.	400 ohm non-inductive resistor	Check tracking at 6.5 Mc/s.

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

1.	To antenna terminal	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 oscl. 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 antenna terminal	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 oscl. 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 antenna terminal	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 oscl. 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 antenna terminal	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 oscl. 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.
5.	To antenna terminal	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 antenna terminal	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 oscl. 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 antenna terminal	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 oscl. 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 antenna terminal	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 oscl. 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 antenna terminal	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 oscl. 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.
5.	To antenna terminal	16.2 Mc/s.	400 ohm non-inductive resistor	Check tracking at 16.2 Mc/s.

6. Remove control knobs, IF. attenuator and alignment template, then refit chassis to cabinet.
7. If the dial pointer does not log correctly with the stations marked on the b/cast section of the dial in the cabinet, remove the chassis from the cabinet and slide the pointer to the left or right the distance required to correct the logging, then refit the chassis.

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	,, ,, ,, ,, ,, ,, ,,
,,	Oscl. ,,	(L221)	BLUE	spot ,, ,, ,, ,, ,, ,,
4.4- 9.2 Mc/s. band	aerial coil	(PT913)	WHITE	spot on iron core end of former
,,	RF ,,	(PT913)	WHITE	,, ,, ,, ,, ,, ,, ,,
,,	Oscl. ,,	(L217)	BROWN	,, ,, ,, ,, ,, ,, ,,