



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.A.

TECHNICAL BULLETIN

BULLETIN: NS-1.

FILE: Receivers AC.

DATE: 2/7/51.

Page 1.

MANTEL MODEL "NS"

Six valve Superheterodyne Four Band Receiver
Incorporating Bandspreading of the 19, 25 and 31 Metre Shortwave Bands.

FOR OPERATION FROM

200-250 Volt 50 Cycle A.C. Electric Supply Mains Transformer Primary
Mains Taps 200-220V. and 221-250V. Power Consumption 65 Watts (approx.).

TUNING RANGES

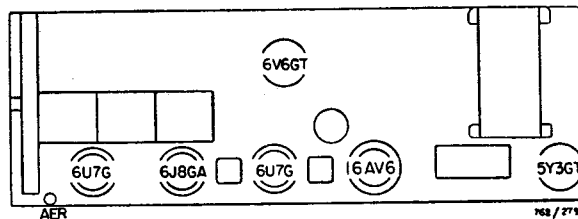
Broadcast Band	..	535-1610 Kc/s.
19 Metre Band	..	14.9-15.5 Mc/s.
25 Metre Band	..	11.6-12.1 Mc/s.
31 Metre Band	..	9.4-9.8 Mc/s.

RECEIVER COVERAGE

560.7-186.3 Metres.
(Bandspread) 20.13-19.29 Metres
(Bandspread) 25.86-24.79 Metres
(Bandspread) 31.91-31.63 Metres

This Bulletin Contains:-

1. Alignment Instructions.
2. Circuit Diagram.
3. Component Parts List.
4. Connections for IF. and RF. Trans.
5. Valve Placement Diagram.
6. Dial Drive Cording Diagram.



VALVE PLACEMENT DIAGRAM

108 / 279

IF. and RF. TRANS. CONNECTIONS

19, 25 and 31 METRE ANT. TRANS.

Lead from top lug (iron core end):-
GRID

Lead from bottom lug (mounting end):-
AVC

19, 25 AND 31 METRE RF. TRANS.

Lead from top lug (iron core end):-
GRID

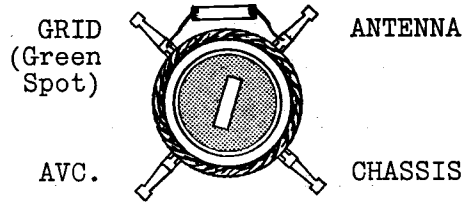
Lead from bottom lug (mounting end):-
CHASSIS

19, 25 AND 31 METRE OSCL. COIL.

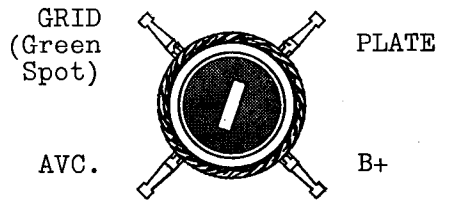
Lead from top lug (iron core end):-
GRID

Lead from bottom lug (mounting end):-
PLATE

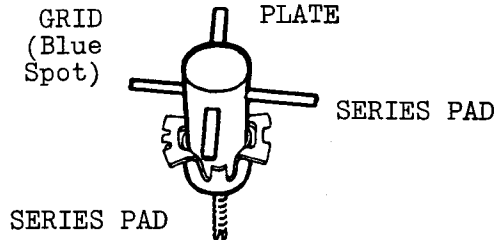
ANTENNA TRANS. B/CAST.



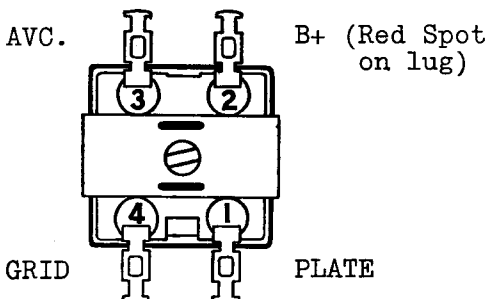
RF. TRANS. B/CAST.



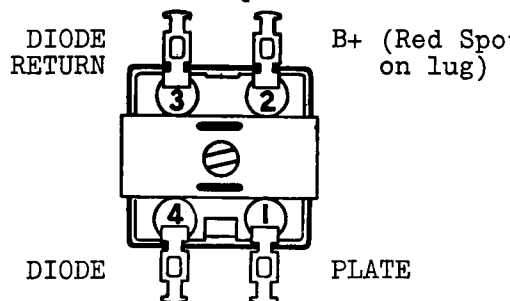
OSCL. COIL B/CAST.



1ST IF. TRANS.



2ND IF. TRANS.



Alignment ConditionsEquipment

Load impedance—5,000 Ohms
 Output level—50 milliwatts
 Volume control—Max. Vol. (fully clockwise)
 Tone control—Treble position
 Intermediate freq.—455 Kc.
 Supply mains—230 Volts 50 cycle AC.
 Input to Power trans. 221-250 Volt Tap.

Signal Generator
 Output meter
 Mica capacitor—0.01MFD.
 Dummy antenna—200MMFD. mica capacitor
 Dummy antenna—400 ohm non-inductive resistor
 Alignment tools—Type M195 and PM581.
 IF. Attenuator—Type M174

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6U7G tube	455 Kc.	0.01MFD mica capacitor in series with generator	Turn wave change switch to B/cast band. Leave grid cap on. Peak 2nd IF. trans. pri. and sec. for max. output.
2.	To control grid of 6J8GA tube	455 Kc.	0.01MFD Mica capacitor in series with generator	Gang plates fully out of mesh. Leave grid cap on. Peak 2nd IF. trans. pri. and sec. for max. output.
3.	Set centre of dial pointer on centre of end of travel mark near 550 Kc. Cond. gang plates fully meshed.			

RECEIVERS FITTED WITH IRON CORED B/CAST ANTENNA, RF. AND OSCL. TRANSFORMERS.

4.	To antenna terminal	600 Kc.	200MMFD. Mica capacitor in series with generator	Turn gang and dial pointer until dial pointer is on 600 Kc. 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.	200MMFD. Mica capacitor in series with generator	Turn gang and dial pointer to 1400 Kc. dial mark. Adjust B/cast oscl. coil. trim. cond. for logging and peak B/cast and RF. trans. trim condensers for max. output.
6.	To antenna terminal	600 Kc.	200MMFD. Mica capacitor in series with generator	Turn gang and dial pointer to 600 Kc. 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. dial mark until after the in-

File: RECEIVERS AC.

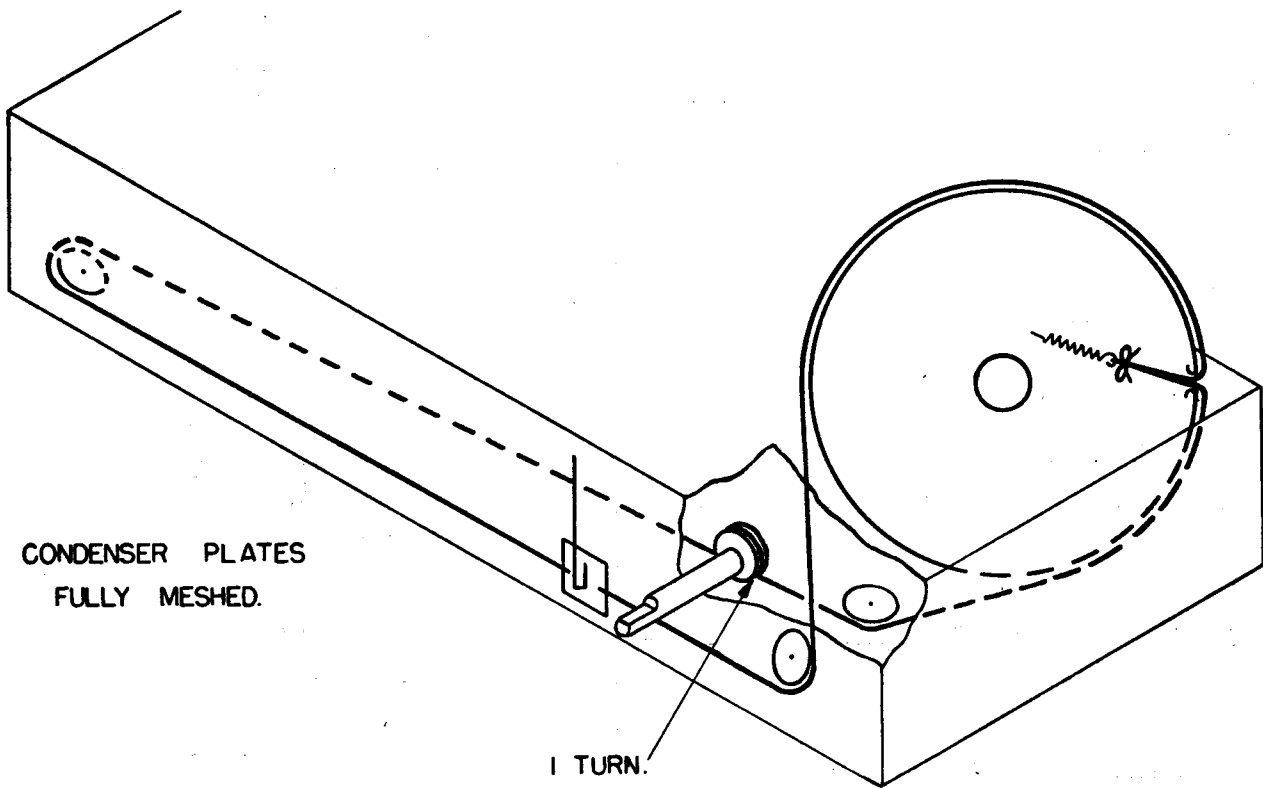
Subject:

CORDING OF DIAL DRIVE.

Length of cord required is 5 ft. 6 in. which includes about 6 in to spare for tying to the tension spring.

Cord Part No. 7/282.

Tension Spring Part No. 21/698.



Circuit No.	Description	Tol.±	Rating	Part No.
59.	300 Ohm Wire Wound Resistor	10%	$\frac{1}{2}$ Watt	PR258
60.	300 Ohm Wire Wound Resistor	10%	1 Watt	PR122
61.	50 Ohm Wire Wound Resistor	10%	$\frac{1}{2}$ Watt	PR280
62.	25 Ohm Wire Wound Resistor	10%	$\frac{1}{2}$ Watt	PR281
63.	.5 Megohm Carbon Potentiometer tapped at 40K Ohms and with DP.ST. switch attached			PR662
64.	100,000 Ohm Potentiometer	20%		PR699
65.				
66.	RF. Transformer—Broadcast			PT906
67.	Antenna Transformer—Broadcast			PT905
68.	Oscillator Coil—Broadcast			PT860
69.	IF. Transformer			PT869
70.	IF. Transformer			PT869
71.	Speaker Input Transformer 5,000 Ohms pri. imped. to 3.7 Ohms voice coil imped. Code No. KBG 112			PT848
72.	Choke 14H. 60 Ma. 520 Ohms DC. resistance			PT806
73.	{ Power Transformer 200-250 Volt 50 Cycle operation			PT807
	{ Power Transformer 200-260 Volt 40 Cycle operation			PT809
74.	19 Metre Spreadband Coil (blue spot on former)			PT914
75.	25 Metre Spreadband Coil (white spot on former)			PT913
76.	31 Metre Spreadband Coil (red spot on former)			PT912
77.	6" Permag Speaker (no input trans.)			K166
78.	Wave Change Switch			S166
79.	Dial and Band Indicator Lamps 6-8 V. 0.25 Amp. Min. Screw Base. Bulb Size T3 $\frac{1}{4}$			PM678
80.	Mains ON/OFF Switch—part of volume control circuit No. 63			—
	Socket, 8 pin			PM532
	Socket, 7 pin			A104/58
	Terminal—antenna—press down type			PM306
	Valve Shield for 6U7G tubes—ST12 bulb			PM217

Description	Part No.	Description	Part No.
Valve Shield Earth Contact	22/30c	Insulating Paper Strip	
Pick-up Plug Bar Assy.	A101/513	for input trans.	348/64
Grommet, on power cord	40/30c	Grid Clip	873/495
Grommet, on cond. mtg.	64/30A	Pulley $\frac{5}{8}$ " dia. wood	13/613
Clip for IF trans. mtg.	7/670	Pulley $\frac{3}{4}$ " dia. wood	17/87
Clip for RF. coil mtg.	6/622	Studs—pulley mtg.	18/87
Dial Drum Assy.	A104/698	Valve Shield (6AV6)	38/635
Speaker Lead Junction		Adaptor Plate for	
Strip Assy.	A105/698	6AV6 tube socket	15/698
Mount Strip for input		Tuning Spindle	6/698
trans.	347/64	Bush for tuning spindle	4/698

CABINET PARTS

Cabinet—walnut	155/81-4	Dial Lamp Socket Assy.	A105/661
Knob—front—walnut	167/81	Clips—back retaining	17/620
Knob—side—walnut	178/81	Lamp Shield	24/698
Dial Retaining Cup—walnut	3/683-1	Dial Reading NSW.	40/698-2
Felt Washer for knobs	7/758	Dial Reading VICT-TAS.	40/698-3
Knob Retaining Clips	22/755	Dial Reading SA-WA.	40/698-5
Speaker Clip	20/698	Dial Reading QLD.	40/698-4
Felt Pads for Dial	16/685	Light Button—red	27/688-1
Cabinet Back	19/698-1	Light Button—green	27/688-2
Dial Pointer Assy.	A101/698	Light Button—clear	27/688-3
Dial Background Assy.	A112/698	Light Button—blue	27/688-4
Band Indicator		Cabinet Mtg. Foot Assy.	A138/30c
Lamp Socket Assy.	A110/698		

6. (Contd.) ductance trimmers of these three transformers have been peaked for max. output.
7. To antenna terminal 1400 Kc. 200MMFD mica capacitor in series with generator Turn gang and dial pointer to 1400 Kc. dial mark. Adjust B/cast. oscl. coil. trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
8. Turn wave change switch to 31 metre band (this band must be aligned before the 25 and 19 metre bands).
9. To antenna terminal 9.6 Mc. 400 Ohm non-inductive resistor in series with generator Turn dial pointer and gang to 9.6 Mc. Adjust 31 metre band. oscl. coil ind. trim. (iron core) for logging and peak 31 metre ant. and RF. trans. trims. (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
10. To antenna terminal 11.8 Mc. 400 Ohm non-inductive resistor in series with generator Turn wave change switch to 25 metre band. Turn dial pointer and gang to 11.8 Mc. Adjust 25 metre band oscl. coil. ind. trim. (iron core) for logging and peak 25 metre band antenna and RF. trans. trims. (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
11. To antenna terminal 15.2 Mc. 400 Ohm non-inductive resistor in series with generator Turn wave change switch to 19 metre band. Turn dial pointer and gang to 15.2 Mc. Adjust 19 metre band oscl. coil ind. trim (iron core) for logging and peak 19 metre ant. and RF. trans. trims. (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
12. Check the logging of the shortwave bands on some well-known short-wave stations. If a crystal calibrator is available check the logging at each 100 Kc. mark on the dial.

NOTE:-The IF. Attenuator part No. M174 (.004MF cond. and a 20K. ohm resistor in series) is connected between the 6U7G. IF. tube control grid and chassis during alignment of the RF. and antenna stages and during the measurement of the overall sensitivity.

Circuit No.	Description	Tol.±	Rating	Part No.
1.	.1MFD Paper Condenser	20%	400V DCW	PC103
2.	.1MFD Paper Condenser	20%	400V DCW	PC103
3.	.1MFD Paper Condenser	20%	200V DCW	PC218
4.	.05MFD Paper Condenser	20%	200V DCW	PC102
5.	.05MFD Paper Condenser	20%	200V DCW	PC102
6.	.05MFD Paper Condenser	20%	200V DCW	PC102
7.	.05MFD Paper Condenser	20%	200V DCW	PC102
8.	.05MFD Paper Condenser	20%	200V DCW	PC102
9.	.05 MFD Paper Condenser	20%	200V DCW	PC102
10.	.05MFD Paper Condenser	20%	400V DCW	PC109
11.	.03MFD Paper Condenser	20%	200V DCW	PC303
12.	.02MFD Paper Condenser	20%	400V DCW	PC111
13.	.002MFD Paper Condenser	20%	600V DCW	PC112
14.	.001MFD Mica Condenser	10%	1000VT	PC108
15.	.00046MFD Mica Condenser	2½%	1000VT	PC728
16.	.0002MFD Mica Condenser	10%	1000VT	PC124
17.	.0001MFD Mica Condenser	10%	1000VT	PC110
18.	.0001MFD Mica Condenser	10%	1000VT	PC110
19.	.0001MFD Mica Condenser	10%	1000VT	PC110
20.	.00005MFD Mica Condenser	10%	1000VT	PC141
21.	85MMFD Silvered Mica Condenser	2½%	1000VT	PC809
22.	85MMFD Silvered Mica Condenser	2½%	1000VT	PC809
23.	80MMFD Silvered Mica Condenser	2½%	1000VT	PC798
24.	70MMFD Silvered Mica Condenser	2½%	1000VT	PC799
25.	70MMFD Silvered Mica Condenser	2½%	1000VT	PC799
26.	50MMFD Silvered Mica Condenser	2½%	1000VT	PC801
27.	30MMFD Silvered Mica Condenser	1MMFD	1000VT	PC810
28.	30MMFD Silvered Mica Condenser	1MMFD	1000VT	PC810
29.	25MMFD Silvered Mica Condenser	1MMF	1000VT	PC802
30.	15MMFD Silvered Mica Condenser	1MMFD	1000VT	PC811
31.	4MMFD Silvered Mica Condenser	+1MMF-0	1000VT	PC830
32.	16MFD Elytic Cond. tol. ±20%	525PV	Combination Type	PC760
33.	16MFD Elytic Cond. tol. ±20%	525PV		
34.	25MFD Elytic Cond. tol. ±20%	40PV		
35.	3 Gang Variable Condenser			PC652
36.	1.5-18MMFD Trimmer Condenser			PC250
37.	1.5-18MMFD Trimmer Condenser			PC250
38.	0-15MMFD Trimmer Condenser, wire wound			PC846
39.	{ 8MMFD Ceramicon Condenser part of antenna transformer circuit No. 67	+ .5-1MMFD	500V DCW	PC832
40.	10 Megohm Carbon Resistor	10%	1 Watt	PR236
41.	3 Megohm Carbon Resistor	10%	½ Watt	PR282
42.	1.75 Megohm Carbon Resistor	10%	¼ Watt	PR248
43.	.5 Megohm Carbon Resistor	10%	¼ Watt	PR245
44.	.25 Megohm Carbon Resistor	10%	1 Watt	PR496
45.	100,000 Ohm Carbon Resistor	10%	½ Watt	PR103
46.	60,000 Ohm Carbon Resistor	10%	½ Watt	PR125
47.	50,000 Ohm Carbon Resistor	10%	1 Watt	PR115
48.	50,000 Ohm Carbon Resistor	10%	¼ Watt	PR160
49.	50,000 Ohm Carbon Resistor	10%	¼ Watt	PR160
50.	50,000 Ohm Carbon Resistor	10%	¼ Watt	PR160
51.	{ 15,000 Ohm Carbon Resistor two 30,000 Ohm 1 watt carbon resistors part No. PR156, wired in parallel.	10%	2 Watt	consists of
52.	25,000 Ohm Carbon Resistor	10%	1 Watt	PR116
53.	20,000 Ohm Carbon Resistor	10%	1 Watt	PR171
54.	2,000 Ohm Carbon Resistor	10%	½ Watt	PR253
55.	2,000 Ohm Carbon Resistor	10%	¼ Watt	PR253
56.	500 Ohm Carbon Resistor	10%	¼ Watt	PR274
57.	300 Ohm Wire Wound Resistor	10%	¼ Watt	PR258
58.	300 Ohm Wire Wound Resistor	10%	¼ Watt	PR258