



# RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

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

## TECHNICAL BULLETIN

Bulletin: "MQ-1".  
File: Receivers  
Vibrator.

Date: 1/8/50.  
Page: 1.

Subject:

MANTEL MODEL "MQ"

5 Tube Superheterodyne Receiver  
Incorporating Bandspreading of the  
19, 25 and 31 Metre Shortwave Bands.

For operation from: A 6-volt Accumulator.

Current Consumption: 1.25 Amps. (Does not include dial lamps or band indicator lamp).

### TUNING RANGES

Broadcast Band 535-1640 Kc/s

19 Metre Band 14.9-15.5 Mc/s (Bandspread)

25 Metre Band 11.6-12.1 Mc/s (Bandspread)

31 Metre Band 9.4- 9.8 Mc/s (Bandspread)

### RECEIVER COVERAGE (approx.)

560.7-182.9 metres

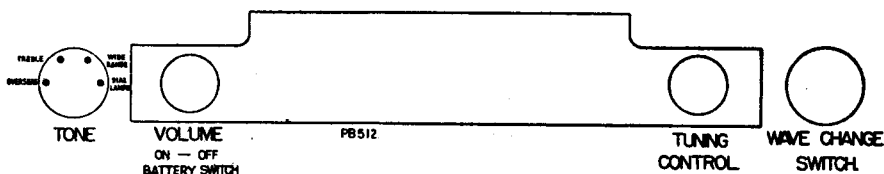
20.13- 19.29 metres

25.86- 24.79 metres

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.



Subject:

ALIGNMENT INSTRUCTIONS-Model "MQ"

<u>Alignmnt Conditions</u>		<u>Equipment</u>
Load impedance	-15,000 ohms	Signal Generator
Output level	-50 milliwatts	Output meter
Volume control	-Max. Vol. (Fully clockwise)	Mica capacitor -0.01 MFD
Tone control	-Treble position	Dummy Antenna -200 MMFD mica capacitor
Intermediate freq.	-455 Kc/s.	Dummy Antenna -400 ohm non-inductive resistor
D.C. Supply	-6-volt accumulator	Alignment tools -Type M195 & PM581

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 1M5G IF tube	455 Kc/s	0.01 MFD. 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 1C7G tube	455 Kc/s	0.01 MFD. 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/s. Cond. gang plates fully meshed.
<b>RECEIVERS FITTED WITH IRON CORED B/CAST ANTENNA, R.F. AND OSCL. TRANSFORMERS</b>				
4.	To antenna terminal	600 Kc/s	200 MMFD 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	200 MMFD 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 R.F. trans. trim condensers for max. output.

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):-  
EARTH

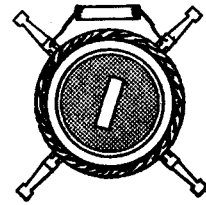
19, 25 AND 31 METRE OSCL. COIL

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

Lead from bottom lug (mounting end):-  
PLATE

ANTENNA TRANS. B/CAST.

GRID  
(Green Spot)



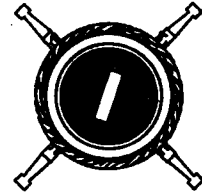
ANTENNA

AVC.

EARTH

RF. TRANS. B/CAST.

GRID  
(Green Spot)



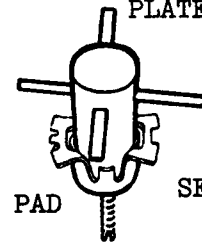
B+

AVC.

PLATE

OSCL. COIL B/CAST.

GRID  
(Blue Spot)



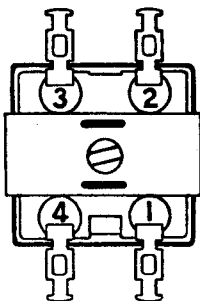
PLATE

SERIES PAD

SERIES PAD

1ST IF. TRANS.

EARTH



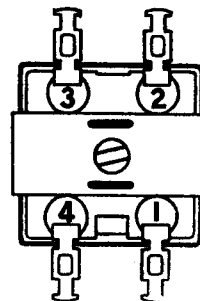
B+ (Red Spot on lug)

GRID

PLATE

2ND IF. TRANS.

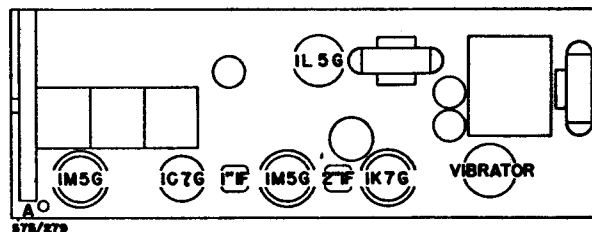
DIODE  
RETURN



B+ (Red Spot on lug)

DIODE

PLATE



VALVE PLACEMENT DIAGRAM

Component Parts List-Model "MQ"

Circuit No.	Description	Tol.±	Rating	Part No.
61.	60,000 ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR125
62.	2,000 ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR253
63.	50 ohm Wire Wound Resistor	10%	$\frac{1}{2}$ Watt	PR280
64.	50 ohm Wire Wound Resistor	10%	$\frac{1}{2}$ Watt	PR280
65.	33.3 ohm Wire Wound Resistor	5%	1 Watt	PR506
66.	16.6 ohm Wire Wound Resistor	5%	1 Watt	PR374
67.	.5 Megohm Carbon Potentiometer tapped at 40 K.ohms and with DP.ST. switch on rear of housing	20%		PR662
68.	Transformer-Vibrator, Power			PT936
69.	Transformer-IF No. 1			PT869
70.	Transformer-IF No. 2			PT869
71.	Choke, HT			PT109
72.	Choke, HT			PT109
73.	Choke, HT-Laminated			PT108
74.	Choke, LT-Laminated			PT112
75.	Choke, LT-Layer wound			PT111
76.	Choke, LT-Spiral wound			PT439
77.	Spread Band Coil, 19 Metre-(Blue Spot)			PT914
78.	Spread Band Coil, 25 Metre-(White Spot)			PT913
79.	Spread Band Coil, 31 Metre-(Red Spot)			PT912
80.	Coil, Oscillator-B/cast			PT860
81.	Transformer, RF-B/cast			PT906
82.	Transformer, Antenna-B/cast			PT905
83.	Transformer, Speaker input 15,000 ohms pri. imped.			PT915
84.	Dial and Band Indicator Lamps 6-8 Volt 0.25 Amp. Min. Screw Base, T3 $\frac{1}{4}$ size Bulb			PM678
85.	Vibrator 6 Volt Synchronous			M151
86.	Wave Change Switch			S166
87.	Tone Control/Dial Lamp Switch			S167
88.	Speaker 6" Permug			K147
89.	8 MMFD-(Part of Circuit No. 82)			PC832
90.	(Mica Strip for hash plate (Bakelite Strip for hash plate)			29/216 19B/47
91.	Fuse-1 strand of No. 36 SWG tinned copper wire			S36T
92.	On/Off switch (Part of volume control circuit No. 67)			
93.	5,000 Ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR250
	Socket 8 pin			PM532
	Socket 6 pin-Vibrator			A102/58
	Terminal-Press down type			PM306
	Valve Shield			PM217
	Valve Shield Earth Contact			22/30 C
	Clip-IF Trans. mounting			7/670
	Dial Drum			A104/698
	Dial Pointer Assembly			A101/698
	Knob-Front (2)			167/81
	Knob-Side (2)			178/81
	Knob-Spring			161/81
	Cabinet-Bakelite			155/81
	Speaker Clip			20/698
	Dial Background			14/698
	Coil Mount Clip			6/622
	Dial Reading-N.S.W.			165/81-2
	Dial Reading-Vic. & Tas.			165/81-3
	Dial Reading-Qld.			165/81-4
	Dial Reading-S.A. & W.A.			165/81-5
	Cabinet Back			19/698
	Clips-Back retaining			17/620
	Battery Clip A+			3/245-1
	Battery Clip A-			3/245-2

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
6.	To antenna terminal	600 Kc/s	200 MMFD 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 R.F. 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.	Turn gang and dial pointer to 1400 Kc/s dial mark. Adjust B/c 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/s	400 Ohm non inductive resistor in series with generator.	Turn dial pointer and gang to 9.6 Mc/s. Adjust 31 metre band oscl. coil. ind. trim. (iron core) for logging and peak 31 metre ant. and R.F. trans. trims. (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
10.	To antenna terminal	11.8 Mc/s	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/s. Adjust 25 metre band oscl. coil. ind. trim. (iron core) for logging and peak 25 metre ant. 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/s	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/s. 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/s mark on the dial.			



COMPONENT PARTS LIST—MODEL "MQ"

Circuit No.	Description	Tol.±	Rating	Part No.
1.	1 MFD Paper condenser	20%	200V.DCW	PC182
2.	1 MFD Paper Condenser	20%	200V.DCW	PC182
3.	.5 MFD Paper Condenser	20%	200V.DCW	PC121
4.	.1 MFD Paper Condenser	20%	400V.DCW	PC103
5.	.1 MFD Paper Condenser	20%	200V.DCW	PC218
6.	.1 MFD Paper Condenser	20%	200V.DCW	PC218
7.	.05 MFD Paper Condenser	20%	400V.DCW	PC109
8.	.05 MFD Paper Condenser	20%	400V.DCW	PC109
9.	.05 MFD Paper Condenser	20%	400V.DCW	PC109
10.	.05 MFD Paper Condenser	20%	200V.DCW	PC102
11.	.05 MFD Paper Condenser	20%	200V.DCW	PC102
12.	.05 MFD Paper Condenser	20%	200V.DCW	PC102
13.	.02 MFD Paper Condenser	20%	400V.DCW	PC111
14.	.01 MFD Paper Condenser	20%	600V.DCW	PC140
15.	.004 MFD Paper Condenser	20%	600V.DCW	PC221
16.	.004 MFD Paper Condenser	10%	2000V.W	PC771
17.	.001 MFD Mica Condenser	10%	1000VT	PC108
18.	.00046 MFD Mica Condenser	2 1/2%	1000VT	PC728
19.	.0003 MFD Mica Condenser	10%	1000VT	PC212
20.	.0003 MFD Mica Condenser	10%	1000VT	PC212
21.	.0002 MFD Mica Condenser	10%	1000VT	PC124
22.	.0001 MFD Mica Condenser	10%	1000VT	PC110
23.	.00005 MFD Mica Condenser	10%	1000VT	PC141
24.	85 MMFD Silvered Mica Condenser	2 1/2%	1000VT	PC809
25.	85 MMFD Silvered Mica Condenser	2 1/2%	1000VT	PC809
26.	80 MMFD Silvered Mica Condenser	2 1/2%	1000VT	PC798
27.	70 MMFD Silvered Mica Condenser	2 1/2%	1000VT	PC799
28.	70 MMFD Silvered Mica Condenser	2 1/2%	1000VT	PC799
29.	50 MMFD Silvered Mica Condenser	2 1/2%	1000VT	PC801
30.	30 MMFD Silvered Mica Condenser	±1 MMFD	1000VT	PC810
31.	30 MMFD Silvered Mica Condenser	±1 MMFD	1000VT	PC810
32.	25 MMFD Silvered Mica Condenser	±1 MMFD	1000VT	PC802
33.	15 MMFD Silvered Mica Condenser	±1 MMFD	1000VT	PC811
34.	6 MMFD Ceramicon Condenser	+1 MMFD-0	1000VT	PC831
35.	4 MMFD Ceramicon Condenser	+1 MMFD-0	1000VT	PC830
36.	24 MFD Electrolytic Condenser	20%	350PV	PC184
37.	16 MFD Electrolytic Condenser	20%	350PV	PC283
38.	8 MFD Electrolytic Condenser	20%	350PV	PC640
39.	500 MFD Electrolytic Condenser	20%	12PV } 12PV }	PC803
	500 MFD Electrolytic Condenser	20%		
40.	1.5-18 MMFD Trimmer Condenser			PC250
41.	1.5-18 MMFD Trimmer Condenser			PC250
42.	0-30 MMFD Trimmer Condenser, Wire Wound			PC663
43.	3 Gang Varb. Condenser			PC652
44.				
45.				
46.	1.75 Megohm Carbon Resistor	10%	1/2 Watt	PR248
47.	1.75 Megohm Carbon Resistor	10%	1/2 Watt	PR248
48.	1.75 Megohm Carbon Resistor	10%	1/2 Watt	PR248
49.	.5 Megohm Carbon Resistor	10%	1 Watt	PR277
50.	.5 Megohm Carbon Resistor	10%	1/2 Watt	PR245
51.	.25 Megohm Carbon Resistor	10%	1 Watt	PR496
52.	100,000 ohm Carbon Resistor	10%	1/2 Watt	PR103
53.	70,000 ohm Carbon Resistor	10%	1 Watt	PR617
54.	50,000 ohm Carbon Resistor	10%	1/2 Watt	PR160
55.	50,000 ohm Carbon Resistor	10%	1/2 Watt	PR160
56.	30,000 ohm Carbon Resistor	10%	1 Watt	PR156
57.	25,000 ohm Carbon Resistor	10%	1 Watt	PR116
58.	10,000 ohm Carbon Resistor	10%	1 Watt	PR325
59.	10,000 ohm Carbon Resistor	10%	1 Watt	PR325
60.	5,000 ohm Carbon Resistor	10%	1 Watt	PR304