

ECLIPSE RADIO PTY. LTD.

(A DIVISION OF ELECTRONIC INDUSTRIES LTD.)

11-21 STURT STREET, SOUTH MELBOURNE
TECHNICAL BULLETIN

Bulletin BMJ-1

File : Receivers, Battery

Date : 1/10/46

SUBJECT—

Type BMJ Mantel Model

5 Tube Battery Operated Superheterodyne

Dual Wave Receiver

Operation is from 135 Volt "B" Battery
2 Volt Accumulator

This Bulletin Contains:

1. Technical Specifications.
2. General Description.
3. Alignment Procedure.
4. Circuit Diagram.
5. Voltage Table.
6. Component Parts List.
7. Coil and Transformer Connections.
8. Photographic Illustrations.



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SUBJECT-Technical Specifications-Receiver Type BMJ

Tube Complement:

- Type 1C7G Converter.
- Type 1M5G IF. Amplifier.
- Type 1M5G IF. Amplifier.
- Type 1K7G Detector, AVC. and Driver.
- Type 1L5G Output Amplifier.

Intermediate Frequency-455Kc.

Tuning Range.

- Broadcast: 540Kc. (Kilocycles) to 1640Kc.
- Short Wave: 5-8Mc. (Megacycles) to 18.5Mc.

Calibration-Straight Line Frequency.

Operating Voltages.

- Operating voltages are "B" Battery 135 Volts,
- "A" Battery 2 Volt Accumulator.

General Description.

This receiver is a five valve dual wave superheterodyne. The circuit design comprises tuned aerial and oscillator stages, a 1C7G converter, two intermediate frequency amplifier stages using 1M5G tubes, a 1K7G tube for diode detection, A.V.C. and 1st audio followed by a 1L5G pentode power output tube.

Three positions are provided for tone control. The first position (fully anticlockwise) causes the receiver to work without inverse feedback and is useful for short-wave reception, since in this condition the receiver operates with maximum gain. Furthermore the high and low audio frequencies are cut, to improve the intelligibility of weak signals. The second position brings into circuit a .006MFD. cond. and a 1 megohm resistor (circuit numbers 14 and 38) providing inverse feedback and producing bass boost. The third position switches into circuit a .003MFD. condenser (circuit number 23) providing treble cut.

Broadcast Operation.

Full A.V.C. is applied to the converter and 1st IF. stages. No A.V.C. is applied to the 2nd IF. stage 3.0 V bias for the output tube is developed across the back bias resistors consisting of 300 Ohms and 150 Ohms in series (circuit numbers 56 and 57) 1.5 volts bias developed across the 150 Ohm resistor (circuit number 57) is applied to the converter, 1st and 2nd IF. valves.

Shortwave Operation.

Operation on shortwaves is substantially the same as on broadcast, except that no A.V.C. or bias is applied to the converter valve.



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SUBJECT—Alignment Instructions—Receiver Type BMJ

Equipment:—

Signal Generator
Dummy Antenna:—
 .01MFD. Mica Capacitor.
 .0002MFD. Mica Capacitor.
 400 Ohm Non-Inductive Resistor.
Output Meter.
Alignment Tool.

Alignment Conditions:—

Load Impedance—15,000 Ohms.
Output Level—50 milliwatts.
Battery Supply—"A" 2 volts. "B" 135 volts.
Volume Control—Maximum Volume (Fully clockwise).
Tone Control—High tone position.
Wave change Switch—Broadcast Band.

Alignment:—

Intermediate Frequency 455Kc.
Do not use a screw driver or alignment tool with an iron point for aligning IF. transformers. A special tool, part Number PM581 is obtainable from the factory or failing this an insulated rod with a small brass blade may be used.
Tuning Range 540Kc—1640Kc.
Set the dial pointer to the right hand margin of the dial scale, near 550Kc.
(Condenser gang plates fully meshed).



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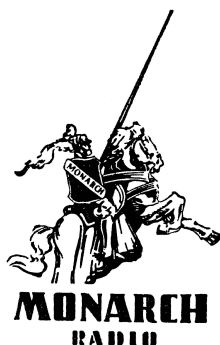
Bulletin BMJ-1

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Date : 1/10/46

SUBJECT—Alignment Instructions—Receiver Type BMJ

Operation	Generator Connection	Frequency	Dummy Capacity	Instructions
WAVE CHANGE SWITCH ON B/CAST POSITION.				
1	To grid of 1M5G. tube. Circuit No. 80.	455Kc.	.01MFD. mica capacitor in series with generator.	Leave grid cap on. Peak 3rd IF. transformer primary and secondary.
2	To grid of 1M5G. tube. Circuit No. 79	455Kc.	.01MFD. mica capacitor in series with generator.	Leave grid cap on. Peak 2nd IF. transformer primary and secondary.
3	To grid of 1C7G tube.	455Kc.	.01MFD. mica capacitor in series with generator.	Cond. gang plates full out. Leave grid cap on. Peak 1st IF. transformer primary and secondary.
4	To antenna lead	1400Kc.	.0002MFD. mica capacitor in series with generator.	Set dial pointer on 1400Kc. Adjust B/cast oscillator trimmer for logging and peak B/cast aerial coil trimmer for maximum.
5	To antenna lead	600Kc.	.0002MFD. mica capacitor in series with generator.	Set dial pointer on 600 Kc. Peak B/cast series padder, rocking gang to and fro while adjusting for maximum output.
TURN WAVE CHANGE SWITCH TO S/WAVE POSITION.				
6	To antenna lead	16Mc.	400 Ohm non-inductive resistor in series with generator.	Set dial pointer on 16Mc. Adjust S/wave oscillator trimmer for logging and peak S/wave aerial coil trimmer for maximum output.
7	To antenna lead	7Mc.	400 Ohm non-inductive resistor in series with generator.	Check tracking.



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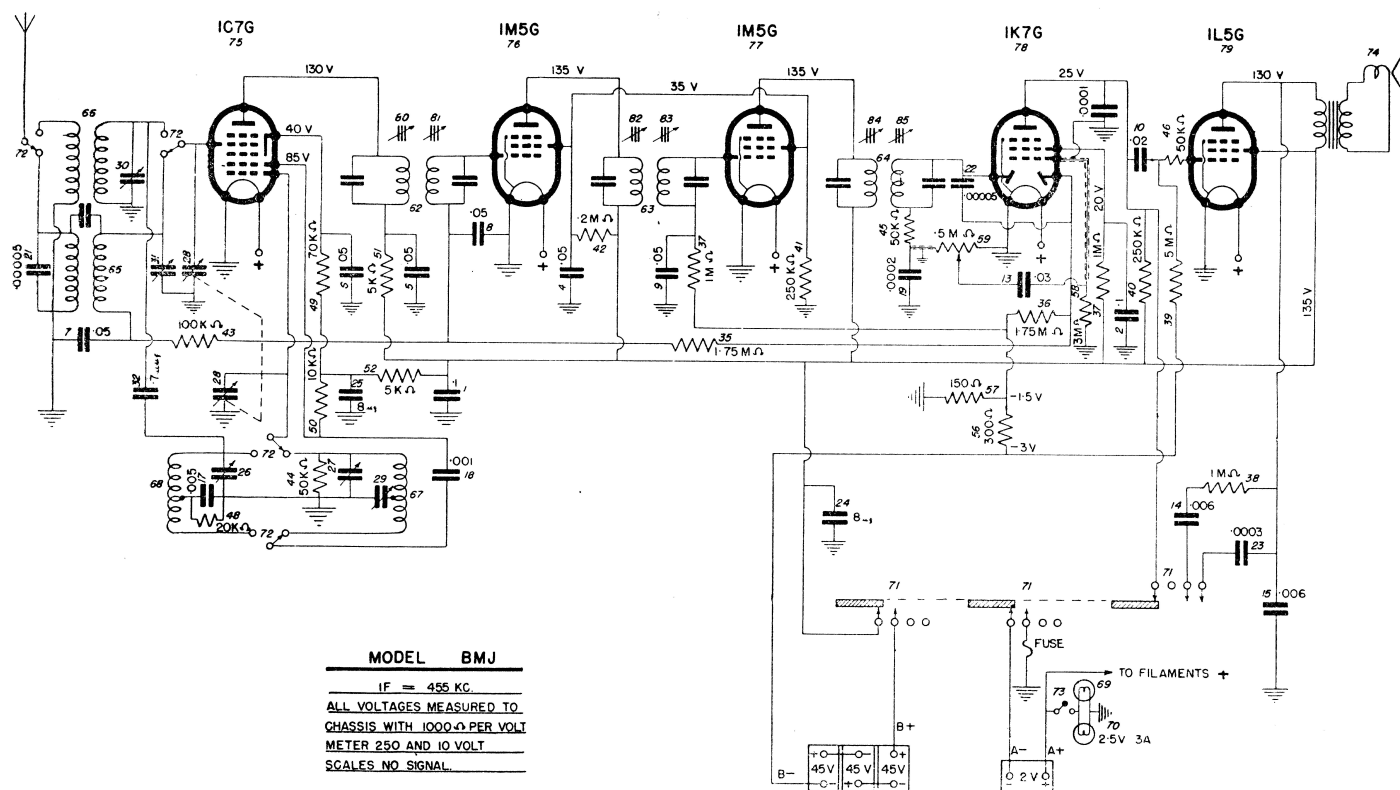
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SUBJECT-Schematic Circuit Diagram-Receiver Type BMJ





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File : Receivers, Battery

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SUBJECT—Voltage Table—Receiver Type BMJ

Equipment:—

1,000 Ohm per volt meter with 0-250 volt and 0-10 volt scales.
0-1,000 M/a meter.

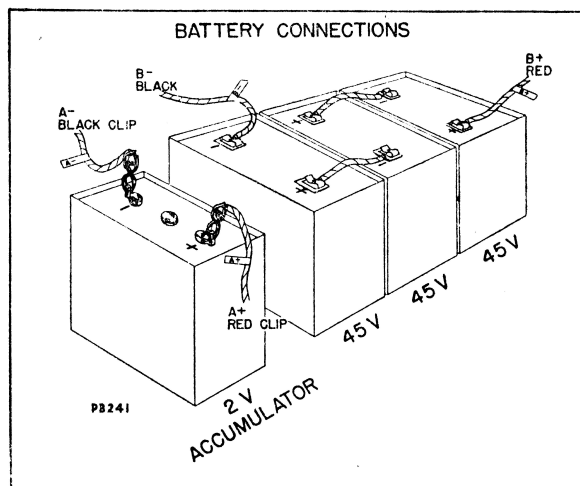
Conditions of Test:—

Set turned to 1,000 Kc.
Volume control full on (clockwise) no signal.
All voltages measured from tube socket contacts to chassis.
"A" Battery 2 volts. "B" Battery 135 volts.

Tube	Fil.	Plate	Screen	Grid	Oscillator Plate
1C7G	2V.	125V.	35V.	1.8V.	83V.
1M5G	2V.	130V.	35V.	1.8V.	—
1M5G	2V.	130V.	35V.	1.8V.	—
1K7G	2V.	35V.	20V.	—	—
1L5G	2V.	128V.	130V.	4.6V.	—

"A" Current drain 720 M/a (does not include dial lamps)

"B" Current drain 12 M/a (no signal).





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SUBJECT—Component Parts List—Electrical—Receiver Type BMJ

Circuit No.	Part Name	Rating	Tol. \pm	Eclipse Part No.
1.	.1 MFD. Paper Condenser	400V	20%	PC103
2.	.1 MFD. Paper Condenser	200V	20%	PC218
3.				
4.	.05 MFD. Paper Condenser	400V	20%	PC109
5.	.05 MFD. Paper Condenser	400V	20%	PC109
6.	.05 MFD. Paper Condenser	400V	20%	PC109
7.	.05 MFD. Paper Condenser	200V	20%	PC102
8.	.05 MFD. Paper Condenser	200V	20%	PC102
9.	.05 MFD. Paper Condenser	200V	20%	PC102
10.	.02 MFD. Paper Condenser	400V	20%	PC111
11.				
12.				
13.	.03 MFD. Paper Condenser	200V	20%	PC303
14.	.006 MFD. Paper Condenser	600V	20%	PC217
15.	.006 MFD. Paper Condenser	600V	20%	PC217
16.				
17.	.005 MFD. Mica Condenser	1000V	5%	PC680
18.	.001 MFD. Mica Condenser	1000V	10%	PC108
19.	.0002 MFD. Mica Condenser	1000V	10%	PC124
20.	.0001 MFD. Mica Condenser	1000V	10%	PC110
21.	.00005 MFD. Mica Condenser	1000V	10%	PC141
22.	.00005 MFD. Mica Condenser	1000V	10%	PC141
23.	.003 MFD. Mica Condenser	1000V	10%	PC212
24.	8 MFD. Electrolytic Condenser	525V	20%	PC313
25.	8 MFD. Electrolytic Condenser	525V	20%	PC313
26.	0-30 MMFD. Wire Wound Trimmer			PC663
27.	0-30 MMFD. Wire Wound Trimmer			PC663
28.	2-Gang Condenser			PC636
29.	150-500 Series Pad			PC164
30.	Double Trimmer Assy.			PC658
31.	Double Trimmer Assy.			PC658
32.	Neutralizing Condenser			PC675
33.				
34.				
35.	1.75 Megohm Carbon Resister	$\frac{1}{2}$ Watt	10%	PR248
36.	1.75 Megohm Carbon Resistor	$\frac{1}{2}$ Watt	10%	PR248
37.	1 Megohm Carbon Resistor	$\frac{1}{2}$ Watt	10%	PR246
37.	1 Megohm Carbon Resistor	$\frac{1}{2}$ Watt	10%	PR246
38.	1 Megohm Carbon Resistor	$\frac{1}{2}$ Watt	10%	PR246
39.	.5 Megohm Carbon Resistor	$\frac{1}{2}$ Watt	10%	PR245
40.	250,000 ohm Carbon Resistor	1 Watt	10%	PR496
41.	250,000 ohm Carbon Resistor	$\frac{1}{2}$ Watt	10%	PR249
42.	200,000 ohm Carbon Resistor	1 Watt	10%	PR414



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SUBJECT—Component Parts List—Electrical—Receiver Type BMJ

Circuit No.	Part Name	Rating	Tol ±	Eclipse Part No.
43.	100,000 ohm Carbon Resistor	1/2 Watt	10%	PR103
44.	50,000 ohm Carbon Resistor	1/2 Watt	10%	PR160
45.	50,000 ohm Carbon Resistor	1/2 Watt	10%	PR160
46.	50,000 ohm Carbon Resistor	1/2 Watt	10%	PR160
47.				
48.	20,000 ohm Carbon Resistor	1/2 Watt	10%	PR166
49.	70,000 ohm Carbon Resistor	1/2 Watt	10%	PR256
50.	10,000 ohm Carbon Resistor	1/2 Watt	10%	PR164
51.	5,000 ohm Carbon Resistor	1/2 Watt	10%	PR250
52.	5,000 ohm Carbon Resistor	1/2 Watt	10%	PR250
53.				
54.				
55.				
56.	300 ohm Wire Wound Resistor	1/2 Watt	10%	PR258
57.	150 ohm Wire Wound Resistor	1/2 Watt	10%	PR237
58.	3 Megohm Carbon Resistor	1/2 Watt	10%	PR282
59.	.5 Megohm Volume Control			PR578
60.				
61.				
62.	1st IF. Transformer			PT386
63.	2nd IF. Transformer			PT386
64.	3rd IF. Transformer			PT387
65.	Broadcast Aerial Coil			PT381
66.	Short Wave Aerial Coil			PT463
67.	Broadcast Osc. Coil			PT414
68.	Short Wave Osc. Coil			PT464
69.	Lamp, Min. Screw			
70.	Lamp, Min. Screw			
71.	Battery and Tone Switch			S114
72.	Wave Change Switch			S107
73.	Pilot Light Push Button			PM395
74.	Speaker 6/12 Permag 15,000 ohm Input			K101
75.	Tube type 1C7G.			
76.	Tube type 1M5G.			
77.	Tube type 1M5G.			
78.	Tube type 1K7G.			
79.	Tube type 1L5G.			
80.	1st IF. Primary Adjusting Screw			
81.	1st IF. Secondary Adjust. Screw			
82.	2nd IF. Primary Adjusting Screw			
83.	2nd IF. Secondary Adjust. Screw			
84.	3rd IF. Primary Adjusting Screw			
85.	3rd IF. Secondary Adjust. Screw			



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SUBJECT—Component Parts List—Mechanical—Receiver Type BMJ

Part Name	Eclipse Part No.
Pointer Carrier Assy.	A103/E231
Lever Assy.	A104/E233
Slide Bar Assy.	A106/E231
Spring (Lever)	30/E231
Dial Drum	4/E231
Phone Tips	11/252
Dial Cord	7/282
Light Diffuser Assy.	A102/E231
Light Diffuser Tension Spring	11/231-2
Pilot Light Assy.	A130/30C
Grid Clips	873/495
Valve Shield Earth Contacts	22/30C
Battery Clip (positive)	3/245-1
(negative)	3/245-2
Cable clips	44/73
Drive spindle	25/E233
Knob Insert Spring	17/81
Speednuts	227/250
Cabinet Feet Assy.	96/47
Dial Glass	6/E248
Battery Plugs	335/30C

CABINET FITTINGS

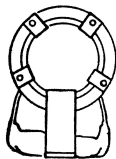
Cabinets		Knobs		Felt Washers	
Colour	Part No.	Colour	Part No.	Colour	Part No.
Walnut	B-4	Walnut	1/E252	To Match	124/74-1
Cream	B-4	Cream	"	"	"
Green	B-4	Green	"	"	"
Blue	B-4	Blue	"	"	"
Champagne	B-4	Champagne	"	"	"

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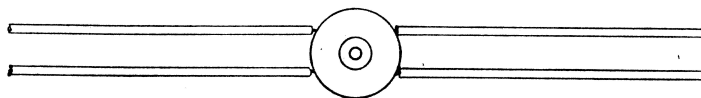
A.V.C.
(Outside secondary) Grid



Antenna (Inside primary)

(Padder Cond.) Red

Black (padder cond.)



(1C7G Osc1. Plate cond.)

Blue

Green (1C7G Osci. Grid)

OSCL. COIL B/CAST.

Earth

Grid

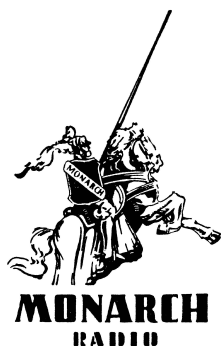
ANT. TRANS. S/WAVE.

A diagram of a circular hatch cover. It features a central handle with a rectangular grip. The cover is secured by four latches, one at each corner. A dashed line indicates the horizontal centerline.

1C7G Osci. Plate cond.

Series Padder

OSCL. COIL S/WAVE.



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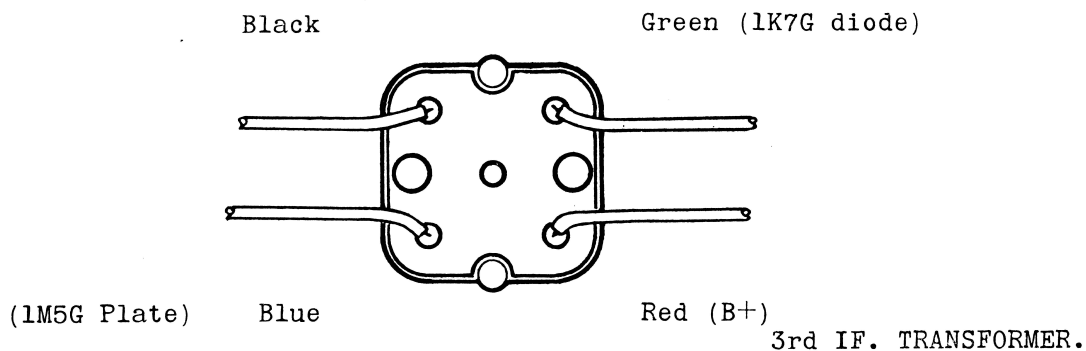
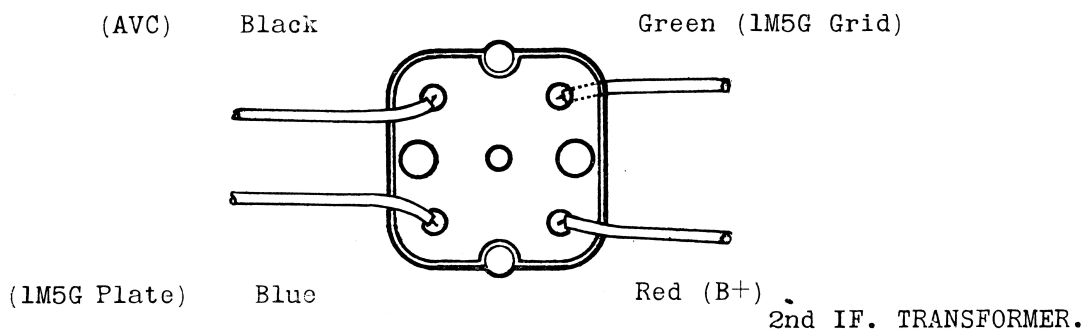
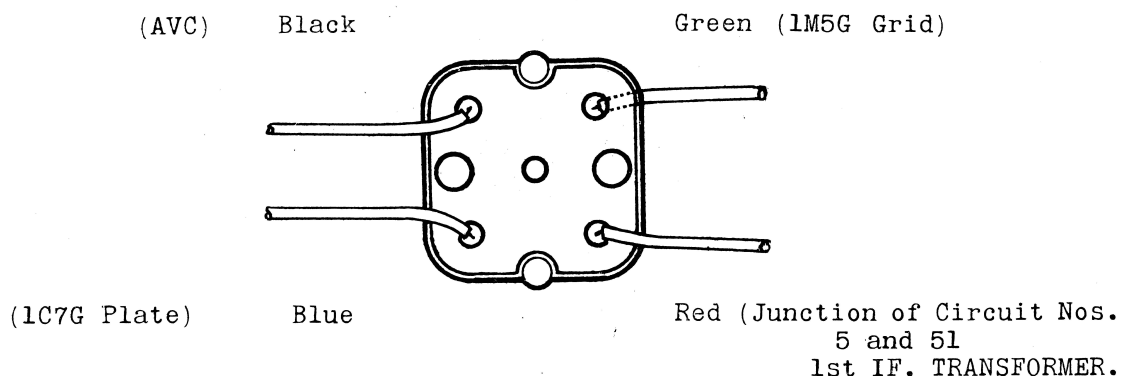
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SUBJECT—Coil and Transformer Connections—Receiver Type BMJ

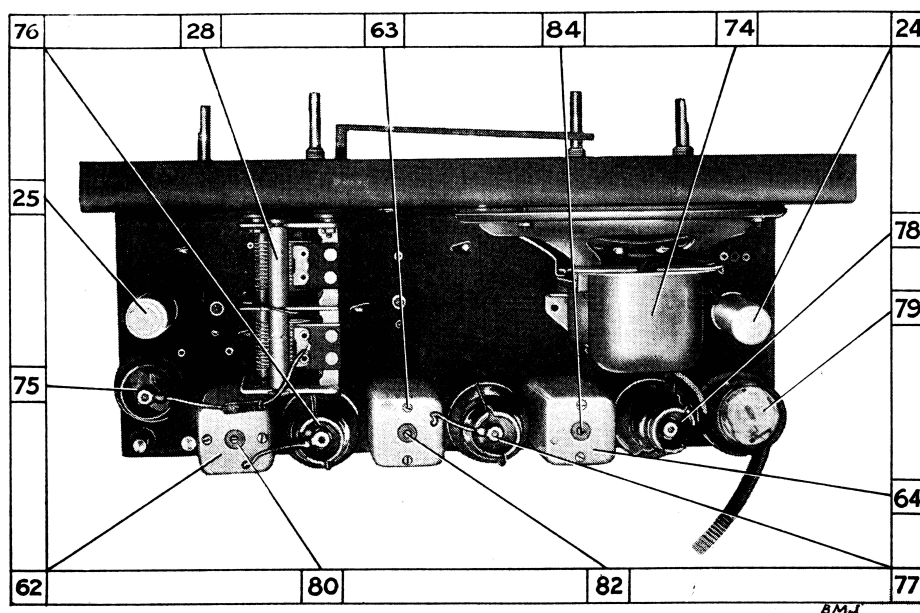


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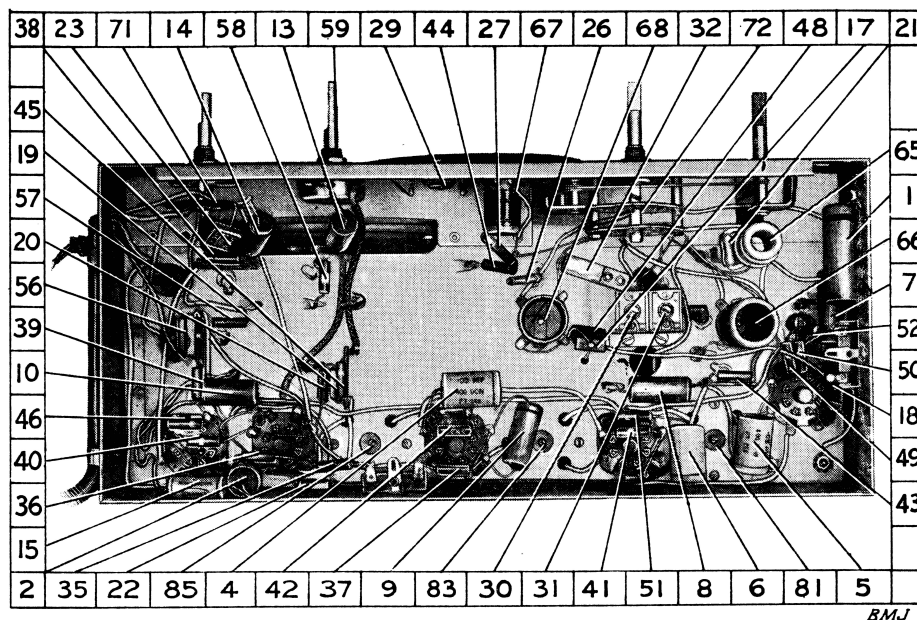
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SUBJECT-CHASSIS TOP AND BOTTOM VIEWS-Receiver Type BMJ



Model BMJ Top View.



Model BMJ Bottom View.