RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN KJ-1
File:-Receivers A/c.
Date: 26/4/46.

SUBJECT- Type "KJ" Mantel Model
5 Tube Dual Wave Superheterodyne
Receiver

For operation from:-

200-250 Volt 50 Cycle A/c. Mains.

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 IF. Transformer Connections.

SUBJECT-Technical Specifications-Receiver Type "KJ"

Tube Complement:-

Type 6J8G Converter.
Type 6U7G IF. Amplifier.
Type 6B6G Detector, AVC. and 1st Audio.
Type 6V6GT Beam Power Output.
Type 5Y3G Full Wave Rectifier.

Intermediate Frequency:-455Kc.

Tuning Range:

Broadcast:-540Kc. (Kilocycles) to 1640Kc.
555M. (Meters) to 182.9M.
Shortwave:-5.8Mc. (Megacycles) to 18.5Mc.
50M. (Meters) to 16M.

Calibration: Straight Line Frequency.

Power Consumption:-55 Watts (approx.).

General Description:-

The type "KJ" model is a 5-tube dual wave superheterodyne receiver designed as a mantel model. The circuit consists of a Triode Heptode converter tube type 6J8G followed by an IF. amplifier using a type 6U7G tube, a type 6B6G tube for diode detection, AVC and 1st audio with a type 6V6G as a beam power output amplifier. A type 5Y3G tube is used for full wave rectification.

Bias for the converter, IF. and output tubes is obtained from separate cathode bias circuits and for the 1st audio stage bias is obtained from the voltage drop across the 3 megohm resistor (48) in the 6B6G tube grid circuit.

AVC. voltage is obtained from the signal diode and applied to the converter and IF. tubes. Delay is obtained by connecting the AVC. line to the second diode in the 6B6G which has a small positive potential applied to it through resistor (47) causing it to conduct. No negative voltage is applied to the controlled tubes until the signal diode negative voltage is high enough to cut off the current through this diode.

Three distinct conditions of tone have been provided in the design of the circuit. The first position being normal tone. For the second position inverse feedback is applied to the grid of the 6B6G tube from the speaker voice coil via the volume control tap and bringing into operation circuit components 62, 11, 60, 56 and 4, providing bass and treble boost. The third position switches out of circuit resistor 56 and condenser 4 producing bass cut. On positions two and three the circuit operates from very low to maximum volume, but the boost is progressively reduced as maximum is approached.

Shortwave Operation: The operation of the circuit on shortwave is substantially the same as on broadcast except that no AVC. is applied to the converter stage.

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126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.
TECHNICAL BULLETIN

BULLETIN KJ-1
File:-Receivers A/c.
Date: 26/4/46.
Page: 3.

SUBJECT-ALIGNMENT PROCEDURE-Receiver Type "KJ"

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

Alignment Conditions:-
Load Impedance-5,000 Ohms.
Output Level- 50 Milliwatts.
Volume Control-Full on (clockwise).
Accousinator Control-Fully anti-clockwise.

Alignment:-
Intermediate Frequency-455 Kc.
Do not use a screw driver or alignment tool with an iron point for aligning IF. transformers. A special tool, Part No. PM581, is obtainable from the factory, or failing this an insulated rod with a small brass blade may be used.
Tuning Range:-Broadcast Band 540-1640 Kc.
Short Wave Band 5.8-18.5 Mc.
Set the dial pointer on the calibration mark on the dial reading near 550 Kc. (Condenser gang plates fully meshed).

SUBJECT-ALIGNMENT INSTRUCTIONS-Receiver Type "KJ"

Operation	Generator Connection	Frequency	Dummy Capacity	Instructions
		Wave Change Switch On B/Cast Position.		
1.	To grid of 6U7G tube	455Kc.	.01MFD. mica capacitor in series with generator	Leave grid cap on. Peak 2nd IF. transformer primary and secondary.
2.	To grid of 6J8G tube	455Kc.	.01MFD. mica capacitor in series with generator	Gang Plates full out. Leave grid cap on. Peak 1st IF. transformer primary and secondary
3.	To antenna lead	1400Kc.	200MMFD., mica capacitor in series with generator	Turn dial pointer to 1400Kc. Adjust oscillator trimmer for logging and peak aerial coil trimmer for maximum
4.	To antenna lead	600Kc.	200MMFD. mica capacitor in series with generator	Turn dial pointer to 600Kc. Peak series padder rocking gang to and fro while adjusting for maximum output
		Turn Wave Change Switch To S/Wave Position.		
5.	To antenna lead	16Mc.	400 Ohm non-inductive resistor in series with generator	Turn dial pointer to 16Mc. Adjust oscillator trimmer for logging and peak aerial coil trimmer for maximum output
6.	To antenna lead	7Mc.	400 Ohm non-inductive resistor in series with generator	Turn pointer to 7 Mc. and check tracking

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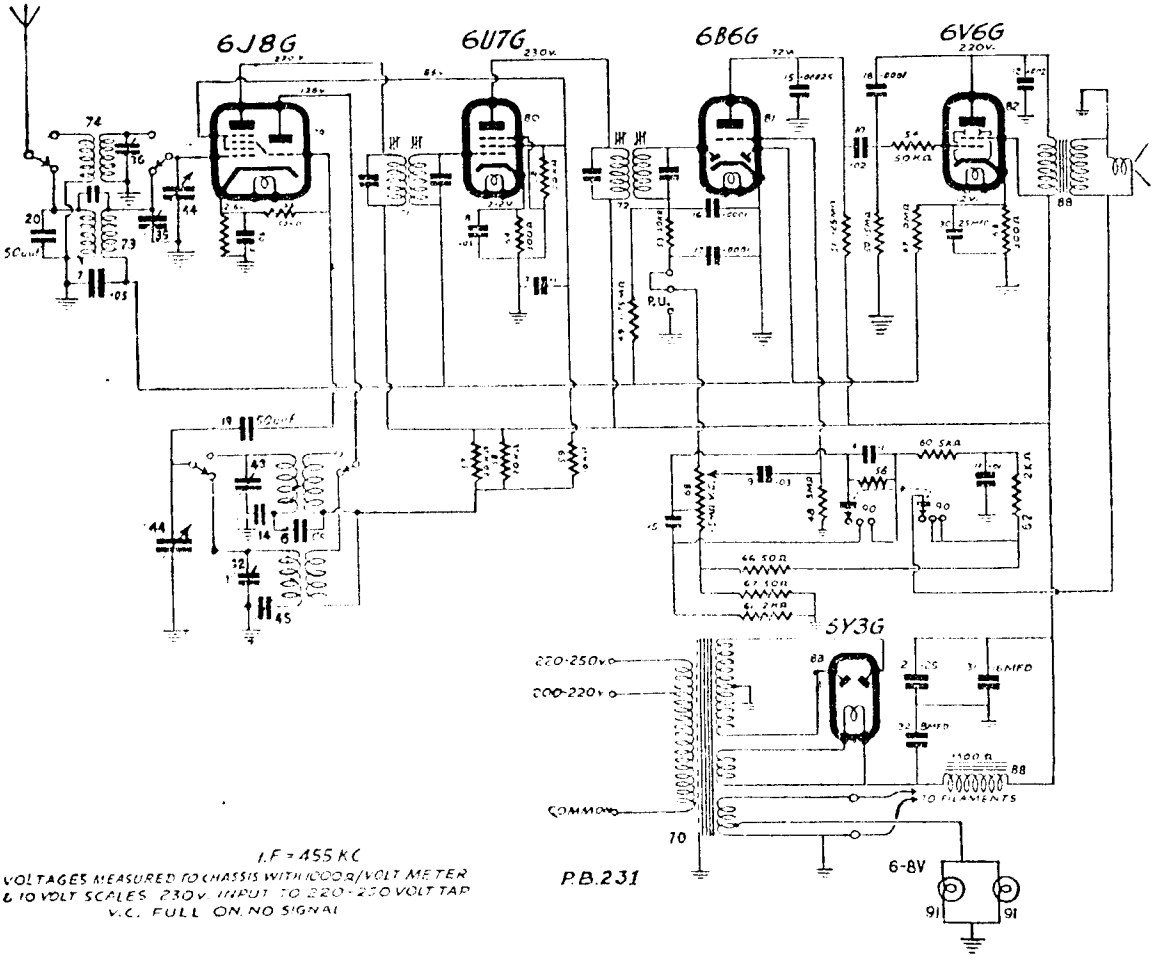
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.
TECHNICAL BULLETIN

BULLETIN KJ-1
File:-Receivers A/c.
Date: 26/4/46.
Page: 5

SUBJECT-Schematic Circuit Diagram-Receiver Type "KJ"



SUBJECT-VOLTAGE TABLE-RECEIVER TYPE "KJ"

Equipment:-

Volt Meter:-1000 ohms per volt with 0-250 volt and 0-10 volt scales.

Conditions of Test:-

All voltages measured from tube socket contacts to chassis,. 230 volt 50 cycle A/C. input, receiver tuned to 1,000 kc., volume control full on (clockwise), no signal.

Tube.	Fil.	Plate	Screen	Cathode	Oscl. Plate.
6J8G	6.3V.	230V.	85V.	2.6V.	126V.
6U7G	6.3V.	230V.	85V.	2.2V.	-
6B6G	6.3V.	72V.	-	-	-
6V6G	6.3V.	220V.	230V.	12V.	-
5Y3G	5V. 325/325V. RMS. The initial surge voltage across the first electrolytic (circuit No. 32) is 420 volts dropping to normal operating value of 320 volts. DC voltage across field coil is 90 volts.				

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DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.
TECHNICAL BULLETIN

BULLETIN KJ-1
File:-Receivers A/c.
Date: 26/4/46
Page: 7.

SUBJECT-COMPONENT PARTS LIST-ELECTRICAL-RECEIVER TYPE "KJ"

Circuit No.	Part Name	Tol±	Rating	Radio Corp. Part No.
1	.5 mfd Paper Condenser	20%	200V	PC121
2	.25 mfd Paper Condenser	20%	400V	PC128
3	.1 mfd Paper Condenser	20%	400V	PC103
4	.1 mfd Paper Condenser	20%	200V	PC218
5	.05 mfd Paper Condenser	20%	200V	PC102
6	.05 mfd Paper Condenser	20%	200V	PC102
7	.05 mfd Paper Condenser	20%	200V	PC102
8	.05 mfd Paper Condenser	20%	200V	PC102
9	.03 mfd Paper Condenser	20%	200V	PC303
10	.02 mfd Paper Condenser	20%	400V	PC111
11	.01 mfd Paper Condenser	20%	600V	PC140
12	.002 mfd Paper Condenser	20%	600V	PC112
13				
14	.004 mfd Mica Condenser	5%	1000V	PC299
15	.00025 mfd Mica Condenser	10%	1000V	PC126
16	.0001 mfd Mica Condenser	10%	1000V	PC110
17	.0001 mfd Mica Condenser	10%	1000V	PC110
18	.0001 mfd Mica Condenser	10%	1000V	PC110
19	.00005 mfd Mica Condenser	10%	1000V	PC141
20	.00005 mfd Mica Condenser	10%	1000V	PC141
30	25 mfd Electrolytic Condenser	20%	40PV	PC269
31	16 mfd Electrolytic Condenser	20%	525PV	PC300
32	8 mfd Electrolytic Condenser	20%	525PV	PC313
35	Trimmer Condenser (B/Cast Ant. Trans.)	Ant. Trimmer Ass.		PC658
36	Trimmer Condenser (S/Wave Ant. Trans.)			
42	Trimmer Condenser, Wire Wound (B/Cast Osc. Trans.)			PC663
43	Trimmer Condenser, Wire Wound (S/Wave Osc. Trans)			PC663
44	2 Gang Variable Condenser			PC636
45	Variable Padder Condenser (B/Cast)			PC164
47	10 Megohm Carbon Resistor	10%	1 watt	PR236
48	3 Megohm Carbon Resistor	10%	½ watt	PR282
49	1.75 Megohm Carbon Resistor	10%	½ watt	PR248
50	500,000 ohm Carbon Resistor	10%	½ watt	PR245
51	250,000 ohm Carbon Resistor	10%	1 watt	PR496
52	100,000 ohm Carbon Resistor	10%	½ watt	PR103
53	50,000 ohm Carbon Resistor	10%	½ watt	PR160

SUBJECT-COMPONENT PARTS LIST-ELECTRICAL-RECEIVER TYPE "KJ"

Circuit No.	Part Name	Tol. ±	Rating	Radio Corp. Part No.
54	50,000 ohm Carbon Resistor	10%	½ watt	PR160
55	50,000 ohm Carbon Resistor	10%	½ watt	PR160
56	20,000 ohm Carbon Resistor	10%	½ watt	PR166
57	20,000 ohm Carbon Resistor	10%	1 watt	PR171
58	20,000 ohm Carbon Resistor	10%	1 watt	PR171
59	10,000 ohm Carbon Resistor	10%	½ watt	PR164
60	5,000 ohm Carbon Resistor	10%	½ watt	PR250
61	2,000 ohm Carbon Resistor	10%	½ watt	PR253
62	2,000 ohm Carbon Resistor	10%	½ watt	PR253
63	300 ohm Wire Wound Resistor	10%	1 watt	PR122
64	300 ohm Wire Wound Resistor	10%	½ watt	PR258
65	300 ohm Wire Wound Resistor	10%	½ watt	PR258
66	50 ohm Wire Wound Resistor	10%	½ watt	PR280
67	50 ohm Wire Wound Resistor	10%	½ watt	PR280
68	.5 Megohm Volume Control	20%		PR377
69				
70	Power Transformer (200-250 Volt)			PT770
	Power Transformer (200-260 Volt)			PT771
71	1st IF Transformer			PT461
72	2nd IF Transformer			PT462
73	Antenna Transformer (B/Cast)			PT381
74	Antenna Transformer (S/Wave)			PT463
75	Osc. Transformer (B/Cast)			PT383
76	Osc. Transformer (S/Wave)			PT464
79	Type 6J8-G Tube			
80	Type 6U7-G Tube			
81	Type 6B6-G Tube			
82	Type 6V6-G Tube			
83	Type 5Y3-G Tube			
85	8-Pin Sockets (5)			PM532
86	6-Pin Socket			PM145
87	Valve Shields (2)			PM217
88	6-in. Dynamic Speaker, 1,500 ohm field, 5,000 ohm input			PM569
89	Wave Change Switch			PM635
90	Acoustinator Control			PM597
91	Pilot Lamp		6.2V .25A	PM678

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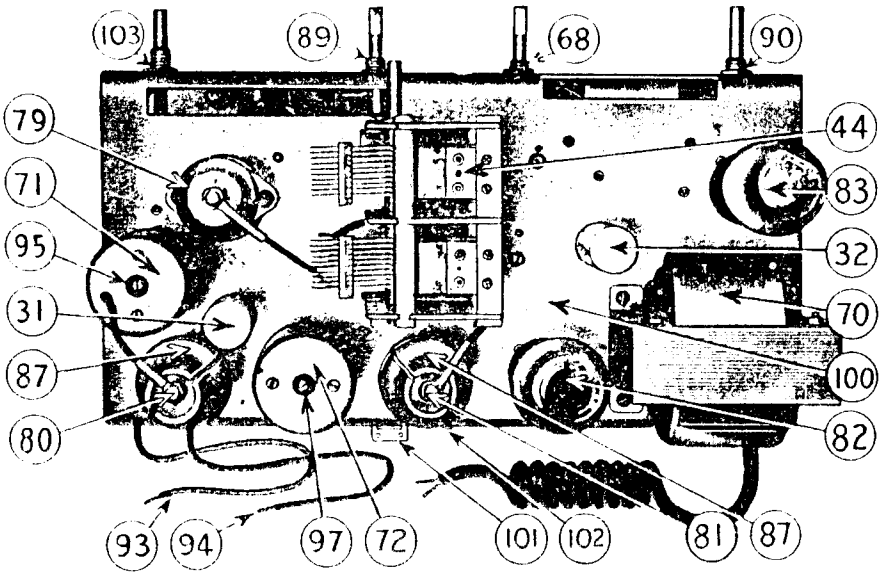
TECHNICAL BULLETIN

BULLETIN KJ-1
File:-Receivers A/c.
Date:-26/4/46
Page: 9

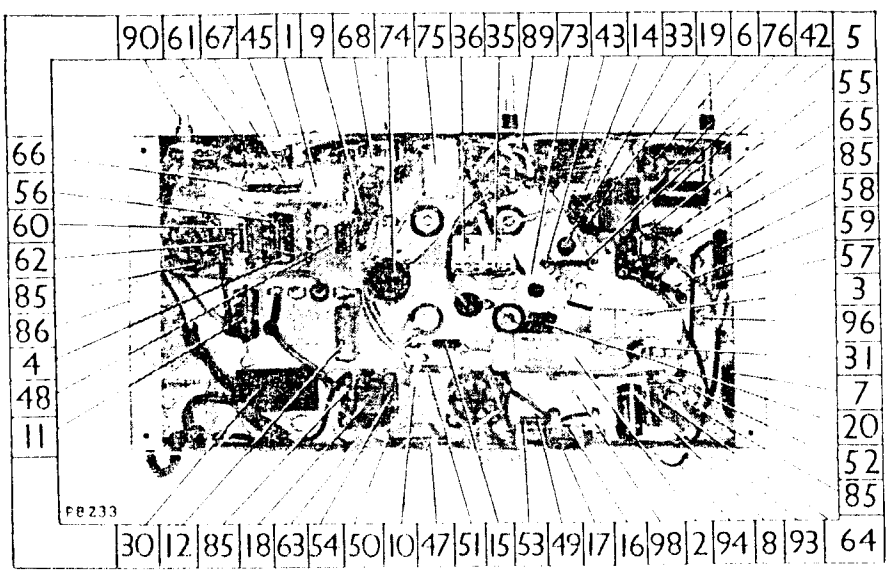
SUBJECT-COMPONENT PARTS LIST-Receiver Type "KJ"

Part Name	Radio Corp. Part No.
Metal Chassis	A101/617
Pick-up Shorting Bar	A101/513
One-Pin Socket	15/58-2
Contact	19/96
Top Plate	18/96
Bottom Plate	
Dial Drive	A109/295
Valve Shield Earth Clips (2)	22/300
Transformer Cover	20/64
Dial Drum	A136/87
Pilot Lamp Socket Assembly (2)	A108/246
Mains Terminal Strip Assembly	A101/300 3
Dial Springs	27/87
Dial Reading Glass	7/616
Dial Frame	A103/616
Dial Pointer Assembly	A104/616
Control Knobs, tuning and acoustinator	40/81-1 (2 off)
Control Knobs	57/81 (2 off)
Designation button for control knob	
Tuning	47/81-A
Volume	47-81 B
Tone	47/81-C
Wave change	47/81-D
Control Knob Springs (4)	42/81
Cabinet	49/81-4
Dial Light Diffuser	8/616
Mount feet for cabinet	96/47
Screws IF. Mounting	39/560-20
Dial pulley	17/87
Dial cord 72"	12/282
Silk Card	35/81
Speed nuts	227/250

SUBJECT-CHASSIS-TOP AND BOTTOM VIEWS-Receiver Type "KJ"



Model KJ Top View



Model KJ Bottom View

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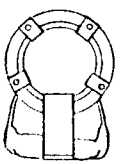
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN KJ-1
File:-Receivers A/c.
Date: 26/4/46
Page: 11

SUBJECT-COIL AND IF. TRANSFORMER CONNECTIONS-Receiver Type "KJ"

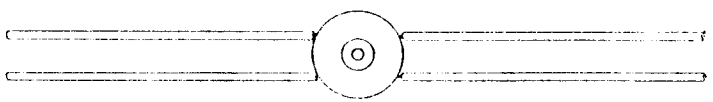
A.V.C. Earth



(Outside secondary) Grid Antenna (Inside primary)

ANT. TRANS. B/CAST.

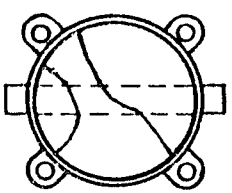
(Junction of circuit numbers 57, 58 and 59) Red Black (Padder cond.)



(6J8G Osc. plate) Blue Green (6J8G Oscl. grid cond.)

OSCL. COIL B/CAST.

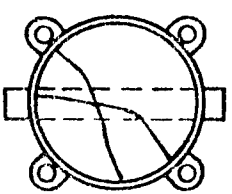
Earth Antenna



Earth Grid

ANT. TRANS. S/WAVE.

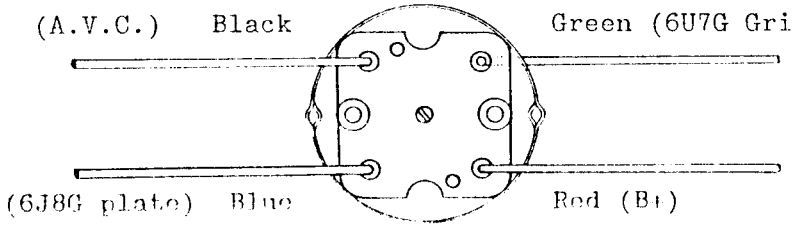
6J8G Oscl. grid cond. Junction of circuit numbers 57, 58 and 59



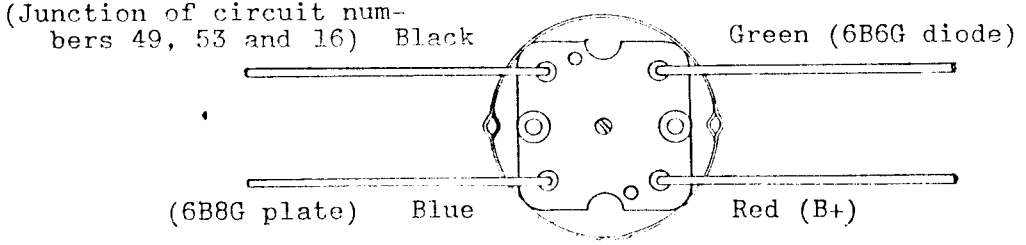
6J8G Oscl. plate Series padder

OSCL. COIL S/WAVE.

SUBJECT-COIL AND IF. TRANSFORMER CONNECTIONS-Receiver Type "KJ"



1st IF. TRANS.



2nd IF. TRANS.

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126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN KJ-2
File:-Receivers A/c.
Date: 5/6/46.

SUBJECT-Substitute Tube-Receiver Type "KJ"

The Model "KJ" may use either a type 6B6G tube or a type 75 tube for the 2nd detector, AVC. and 1st audio stage.

Component Parts Required for Type 6B6G Tube.

Part Name	Part Number
1. off Type 6B6G Tube	-
1. off 8 pin socket	PM.532
1. off grid clip (small)	873/495
1. off valve shield earth clip	22/30C.

Component Parts Required for Type 75 Tube.

Part Name	Part Number
1. off Type 75 Tube	-
1. off 6 pin socket	PM.146
1. off Grid Clip (Large)	156/410
1. off valve shield earth clip	11/50