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

# TECHNICAL BULLETIN



SUBJECT- Type "KL" Mantel Model
4 Tube Broadcast 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 "KL"

TUBE COMPLEMENT:
6A8G Converter.
6B8G IF. Amplifier, AVC., Detector, 1st Audio.
6V6GT Beam Power Amplifier.
5Y3G Full Wave Rectifier.

INTERMEDIATE FREQUENCY: 455 Kcs.

TUNING RANGE: 540 Kcs. (Kilocycles) to 1640 Kcs.
555 M. (Meters) to 182.9 M.

CALIBRATION: Straight Line Frequency.

POWER CONSUMPTION: 40 Watts (Approx.).

GENERAL DESCRIPTION:

The type "KL" Mantel Model is a 4 tube reflexed superheterodyne receiver.

The circuit which is of unusual design has overcome the usual disadvantages of reflexed circuits, i.e., low volume distortion and failure of the volume control to cut off.

The tube line up consists of a 6A8G pentagrid converter followed by a type 6B8G diode pentode used as a combined IF. amplifier, diode detector and A.V.C. bias source and 1st audio amplifier.

A.V.C. is applied to the 6A8G only. Volume is controlled by varying the reflexed audio signal applied to the 6B8G tube. The audio output of this tube is fed directly to the 6V6GT output tube. Degenerative feedback is taken from the secondary of the output transformer and applied to the bottom of the volume control. A second circuit providing bass boost is connected to the tap on the volume control.

Bias (back bias) for the 6V6GT output tube is obtained from the voltage drop across the 250 ohm resistor circuit number 43.

High tension is supplied from full wave rectifier 5Y3G and filtered by resistance capacitive filter comprising 24MFD. electrolytic 450 ohm resistor and 16MFD. electrolytic condenser circuit numbers 20 42 and 19.

SUBJECT-Alignment Procedure-Receiver Type "KL"

EQUIPMENT:-Signal Generator.
Dummy Antenna:-
.01MFD. Mica Capacitor.
200MMFD. Mica Capacitor.
Output Meter.
Alignment Tool.

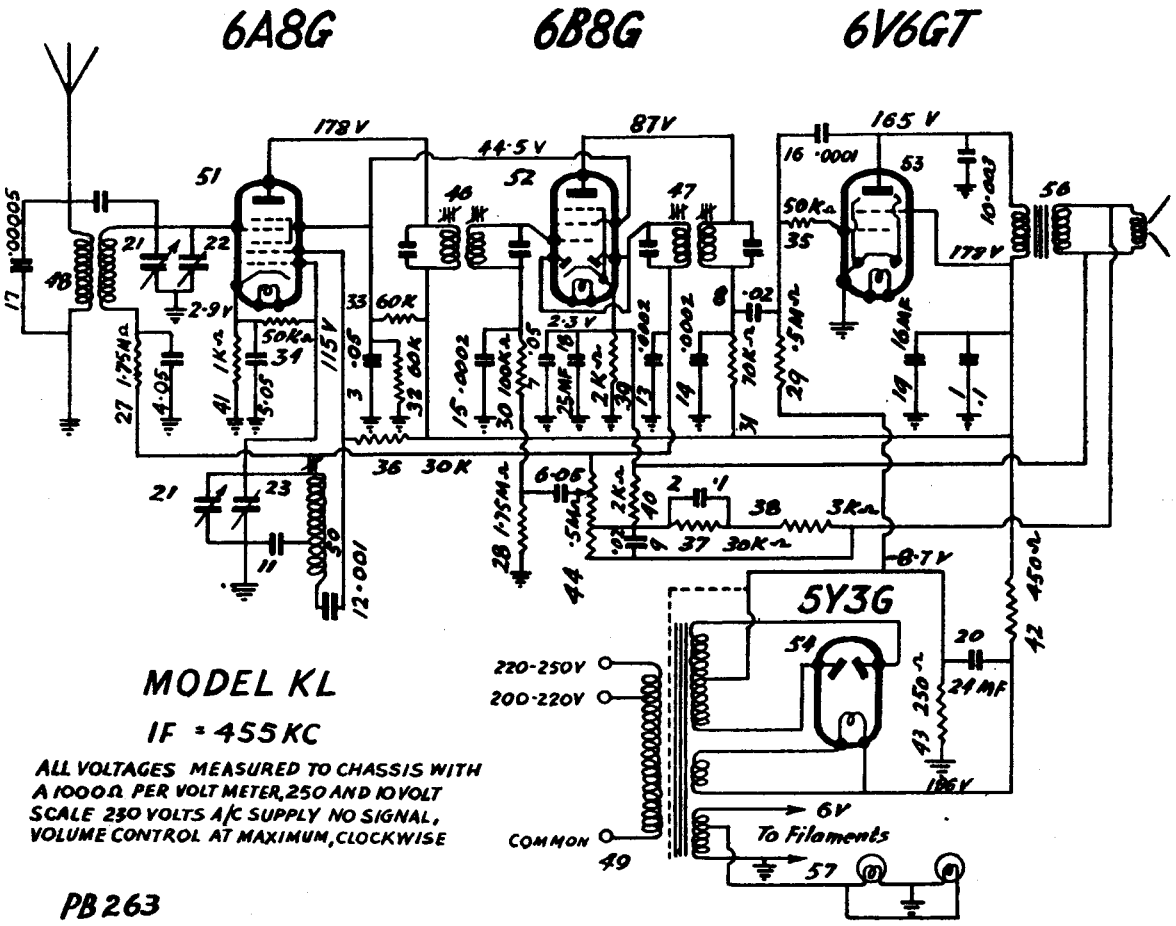
ALIGNMENT CONDITIONS:-
Load Inpedance-5,000 Ohms.
Output Level-50 Milliwatts.
Volume Control-Maximum Volume (Fully Clockwise).

ALIGNMENT:-(Chassis removed from cabinet).
Intermediate Frequency-455 Kcs.
Do not use a screwdriver or alignment tool with an iron point for aligning IF. transformers. A special tool part number PM581 is available from the factory or failing this an insulated rod with a small brass blade may be used.

| Operation No. | Generator Connection | Frequency | Dummy Antenna | Instructions |
|---|---|---|---|---|
| 1. | To grid of 6B8G tube. | 455Kcs. | .01MFD. mica capacitor in series with generator. | Gang plates full out. Leave grid cap on tube. Peak 2nd IF. transformer primary and secondary. |
| 2. | To grid of 6A8G tube. | 455Kcs. | .01MFD. mica capacitor in series with generator. | Gang plates full out. Leave grid cap on tube. Peak 1st IF. transformer primary and secondary. |
| 3. | Set the dial pointer on the end of travel mark near 550Kcs. (located at right hand top edge of dial plate) condenser gang plates fully meshed. | | | |
| 4. | To antenna lead | 600Kcs. | 200MMFD. mica capacitor in series with generator. | Turn dial pointer to 600 Kcs. dial mark. Peak oscillator coil inductance trimmer (iron core) for maximum output rocking gang to and fro while adjusting. |
| 5. | To antenna lead | 1400Kcs. | 200MMFD. mica capacitor in series with generator. | Turn dial pointer to 1400 Kcs. dial mark. Adjust oscillator trimmer for logging and peak aerial coil trimmer. |
| 6. | Repeat operations Nos. 4 and 5. | | | |

Tuning Range 540-1640Kcs.

SUBJECT-Schematic Circuit Diagram-Receiver Type "KL"



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SUBJECT-Voltage Table-Receiver Type "KL"

EQUIPMENT:-

Volt Meter:-

1,000 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 volts 50 cycle A/c. input, receiver tuned to 1,000 Kcs., volume control at maximum volume (fully clockwise) no signal.

| TUBE | FIL. | PLATE | SCREEN | GRID | CATHODE | OSCL. PLATE |
|---|---|---|---|---|---|---|
| 6A8G | 6.3V. | 178V. | 44.5V. | - | 2.9V. | 115V. |
| 6B8G | 6.3V. | 87V. | 44.5V. | - | 2.3V. | - |
| 6V6GT | 6.3V. | 165V. | 178V. | -8.7V. | - | - |
| 5Y3G | 5V. | 198V/198V. RMS. The initial surge voltage across the first electrolytic condenser (circuit No. 20) is 255 volts dropping to normal operating value of 196 volts. DC voltage across 450 ohm filter resistor is 18 volts. | | | | |

SUBJECT-Component Parts List-Electrical-Receiver Type "KL"

| Circuit No. | Part Name | Tol.± | Rating | Radio Corp. Part No. |
|---|---|---|---|---|
| 1. | .1MFD. Paper Condenser | 20% | 400V. DCW | PC103 |
| 2. | .1MFD. Paper Condenser | 20% | 200V. DCW | PC218 |
| 3. | .05MFD. Paper Condenser | 20% | 400V. DCW | PC109 |
| 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. | .02MFD. Paper Condenser | 20% | 400V. DCW | PC111 |
| 9. | .02MFD. Paper Condenser | 20% | 400V. DCW | PC111 |
| 10. | .003MFD. Paper Condenser | 20% | 600V. DCW | PC274 |
| 11. | .00046MFD. Silver Mica Condenser | 2½% | 1000VT. | PC684 |
| 12. | .001MFD. Mica Condenser | 10% | 1000VT. | PC108 |
| 13. | .0002MFD. Mica Condenser | 10% | 1000VT. | PC124 |
| 14. | .0002MFD. Mica Condenser | 10% | 1000VT. | PC124 |
| 15. | .0002MFD. Mica Condenser | 10% | 1000VT. | PC124 |
| 16. | .0001MFD. Mica Condenser | 10% | 1000VT. | PC110 |
| 17. | .00005MFD. Mica Condenser | 10% | 1000VT. | PC141 |
| 18. | 25MFD. Electrolytic Condenser | 20% | 40VP. | PC660 |
| 19. | 16MFD. Electrolytic Condenser | 20% | 350VP. | PC283 |
| 20. | 24MFD. Electrolytic Condenser | 20% | 350VP. | PC686 |
| 21. | 2 Gang Condenser | | | PC689 |
| 22. | 1.5-18MMFD. Trimmer Condenser | | | PC250 |
| 23. | 0-30MMFD. Trimmer Condenser (oscl. stage) | | | PC663 |
| 24. | | | | |
| 25. | | | | |
| 26. | | | | |
| 27. | 1.75 Megohm Carbon Resistor | 10% | ½ Watt | PR248 |
| 28. | 1.75 Megohm Carbon Resistor | 10% | ½ Watt | PR248 |
| 29. | 500,000 Ohm Carbon Resistor | 10% | ½ Watt | PR245 |
| 30. | 100,000 Ohm Carbon Resistor | 10% | ½ Watt | PR103 |
| 31. | 70,000 Ohm Carbon Resistor | 10% | 1 Watt | PR617 |
| 32. | 60,000 Ohm Carbon Resistor | 10% | ½ Watt | PR125 |
| 33. | 60,000 Ohm Carbon Resistor | 10% | ½ Watt | PR125 |
| 34. | 50,000 Ohm Carbon Resistor | 10% | ½ Watt | PR160 |
| 35. | 50,000 Ohm Carbon Resistor | 10% | ½ Watt | PR160 |
| 36. | 30,000 Ohm Carbon Resistor | 10% | ½ Watt | PR151 |
| 37. | 30,000 Ohm Carbon Resistor | 10% | ½ Watt | PR151 |
| 38. | 3,000 Ohm Carbon Resistor | 10% | ½ Watt | PR185 |
| 39. | 2,000 Ohm Carbon Resistor | 10% | ½ Watt | PR253 |
| 40. | 2,000 Ohm Carbon Resistor | 10% | ½ Watt | PR253 |

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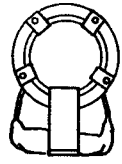
SUBJECT-Coil and IF. Transformer Connections-Receiver Type "KL"

AVC. — Earth

(Outside Secondary) Grid — Antenna (Inside primary)



ANT. TRANSFORMER

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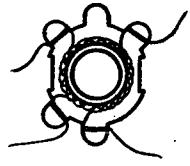
Grid — 6A8G Oscl. Plate cond.

Series pad — Series pad



OSCL. COIL

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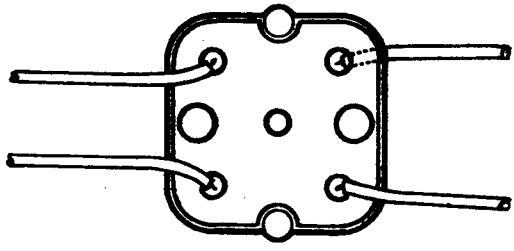
(Junction of circuit Nos. 15 and 30) Black — Green (6B8G Grid)



(6A8G Plate) Blue — Red (B+)

1st IF. TRANS.

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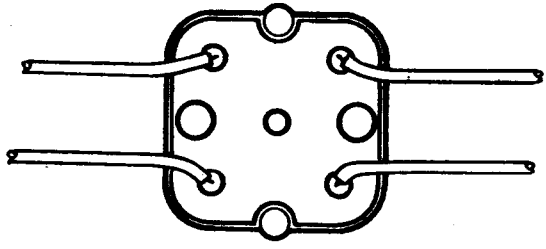
(Junction of circuit Nos. 13, 27 and 44) Black — Green (6B8G Diode)



(6B8G Plate) Blue — Red (Junction of circuit Nos. 8, 14 and 31).

2nd IF. TRANS.

SUBJECT-Component Parts List-Electrical-Receiver Type "KL"

| Circuit No. | Part Name | Tol.± | Rating | Radio Corp. Part No. |
|---|---|---|---|---|
| 41. | 1,000 Ohm Carbon Resistor | 10% | ½ Watt | PR252 |
| 42. | 450 Ohm Wire Wound Resistor | 10% | 1 Watt | PR615 |
| 43. | 250 Ohm Wire Wound Resistor | 10% | ½ Watt | PR259 |
| 44. | .5 Megohm Carbon Potentiometer tapped at 40,000 Ohms | 20% | | PR377 |
| 45. | | | | |
| 46. | 1st IF. Transformer | | | PT753 |
| 47. | 2nd IF. Transformer | | | PT387 |
| 48. | Antenna Transformer | | | PT381 |
| 49. | Power Transformer (200-250 volt) | | | PT794 |
| | Power Transformer (200-260 volt) | | | PT795 |
| 50. | Oscillator Coil | | | PT793 |
| 51. | Tube Type 6A8G | | | |
| 52. | Tube Type 6B8G | | | |
| 53. | Tube Type 6V6GT | | | |
| 54. | Tube Type 5Y3G | | | |
| 55. | Socket 8 pin (4) | | | |
| 56. | Speaker Permag, 5,000 Ohm input | | | K109 |
| 57. | Lamp, Min. Screw Base. T3¼ Bulb. | | | PM678 |

SUBJECT-Component Parts List-Mechanical·Receiver Type "KL"

| Part Name | Radio Corp. Part No. |
|---|---|
| Baffle | 15/628 |
| Spring-Jockey Pulley | 8/613 |
| Clip-Spring Tension | 176/250 |
| Bracket-Pulley | 9/589-1 |
| Pea Lamp Socket (2) | A104/628 |
| Condenser Coupling | 11/609-4 |
| Terminal Strip Assemblies (6) | A103/509 |
| Collar Coupling | 11/628 |
| Grid Clips | 873/495 |
| Tuning Spindle | 12/628 |
| A.C. Tapping Strip | A105/E243 |
| Dial Pointer Assembly | A102/628 |
| Earth Contact-Valve Shield | 22/30C |
| Speed Nuts Dial Clamp | 227/250 |
| Springs-Knob (2) | 86/71 |
| Cabinet Back Spacer (2) | 11/296 |
| Washers-Set Mount | 249/239-1 |

CABINET FITTINGS

| CABINET | | KNOBS | | FELT WASHERS | | CABINET BACK |
|---|---|---|---|---|---|---|
| COLOUR | PART NO. | COLOUR | PART NO. | COLOUR | PART NO. | PART NO. |
| Walnut | 17/628-1 | Walnut | 22/81-4 | Brown | 66/30C | 2/296 |
| Green | 17/628-2 | Green | 22/81-3 | White | 66/30C-1 | 2/296-1 |
| Blue | 17/628-3 | Blue | 22/81-7 | White | 66/30C-1 | 2/296-1 |
| Champagne | 17/628-4 | Champagne | 22/81-6 | White | 66/30C-1 | 2/296-1 |
| Ivory | 17/628-5 | Champagne | 22/81-6 | White | 66/30C-1 | 2/296-1 |
| Chinese Red | 17/628-6 | Walnut | 22/81-4 | Brown | 66/30C | 2/296-1 |
| Mahogany | 17/628-7 | Walnut | 22/81-4 | Brown | 66/30C | 2/296 |
| Marble Champ. | 17/628-8 | Champagne | 22/81-6 | White | 66/30C-1 | 2/296-1 |
| Marble Ivory | 17/628-9 | Champagne | 22/81-6 | White | 66/30C-1 | 2/296-1 |