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# RADIOTRON

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## VALVE DATA

1937

1947

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The National Electrical and Engineering Co. Ltd.

N.Z. DISTRIBUTORS FOR

Amalgamated Wireless Valve Co. Pty. Ltd., Australia.

J.F. Aitchison

Otekaiko

# RADIOTRON

## VALVE DATA

## HANDBOOK



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

# Foreword . . .

This handbook has been made available to satisfy the demand for a convenient and up-to-date source of reference to the characteristics of Australian-made Radiotron receiving valves, together with certain additional imported types.

The data sheets contained herein give for each valve type the applications for which that type is most suited, the physical dimensions, terminal connections, interelectrode capacitances, ratings, typical operating conditions and characteristic curves.

New data sheets for this handbook are distributed periodically as supplements to the technical bulletin "Radiotronics", the annual subscription for which is two shillings.

For details of types not mentioned in this handbook, reference may be made to the "Radiotron Valve Characteristic Chart". For information regarding the interchangeability of Australian-made and other types, the "Radiotron Equivalent Type Chart" may be consulted. Either chart may be obtained free on application or at a cost of threepence posted. All technical inquiries should be addressed to

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

Unified Sales-Engineering Service

BOX 2516 BB, G.P.O., SYDNEY

Telephone No. BO 522

# RADIOTRON

## RECEIVING-VALVE RATINGS

### ACCORDING TO NEW RMA SYSTEM.

A star adjacent to the index corner on the Data page of a receiving-valve type indicates that the maximum ratings for this type are to be interpreted in accordance with RMA Standard M8-210 which follows.

"It shall be standard to interpret the ratings of receiving types of valves according to the following conditions:

"**CATHODE**—The heater or filament voltage is given as a normal value unless otherwise stated. This means that transformers or resistances in the heater or filament circuit should be designed to operate the heater or filament at rated value for full-load operating conditions under average supply-voltage conditions. A reasonable amount of leeway is incorporated in the cathode design so that moderate fluctuations of heater or filament voltage downward will not cause marked falling off in response; also, moderate voltage fluctuations upward will not reduce the life of the cathode to an unsatisfactory degree.

"**PLATE and SCREEN**—In the case of plate voltage and screen voltage, however, recommended maximum values are given. The interpretation of this maximum value depends on the power source, as follows:

*A-C or D-C Power Line:* The maximum ratings of plate and screen voltages and dissipations given on the valve type data sheets are Design Maximums. For equipment designed for use in the United States on nominal power-line services of 105-125 volts, satisfactory performance and serviceability may be anticipated provided the equipment is designed so as not to exceed these Design Maximums at a line voltage of 117 volts.

*Automobile Storage Batteries:* When a valve is used in automobile receivers and other equipment operated from automobile storage batteries, consideration should be given to the larger percentage range over which the battery voltage varies as compared with the power-line voltage. The average voltage value of automobile batteries has been established as 6.6 volts. Automobile-battery-operated equipment should be designed so that when the battery voltage is 6.6 volts, the plate voltage, the plate dissipation, the screen voltage, the screen dissipation, and the rectifier load current will not exceed 90% of the respective recommended design maximum values given in the data for each valve type.

"**B**" *Batteries:* Equipment operated from "B" batteries should be designed so that under no condition of battery voltage will the plate voltage, the plate dissipation, the screen voltage, and the screen dissipation ever exceed the recommended respective maximum values shown in the data for each type by more than 10%.

(continued on next page)

# RADIOTRON

## RECEIVING-VALVE RATINGS

### ACCORDING TO NEW RMA SYSTEM.

(continued from preceding page)

"OTHER ELECTRODES—When a valve is of the multigrid type, the voltages applied to the additional positive electrodes will be governed by the considerations stated under Plate and Screen.

"TYPICAL OPERATION—For many receiving valves, the data show typical operating conditions in particular services. These typical operating values are given to show concisely some guiding information for the use of each type. They are not to be considered as ratings, because the valve can be used under any suitable conditions within its rating limitations."

# RADIOTRON VALVE DATA HANDBOOK

The Radiotron Valve Data Handbook is being completely revised to conform to present requirements. It is intended ultimately to include sheets for every Australian-made receiving valve, together with data for certain other imported types which are of immediate interest. The following contents list clearly shows types for which one or more data sheets have been or will shortly be issued. **Data sheets which have been issued in the past but which are not shown in this list should be removed from the handbook, since they are now out of date.** Types shown in bold face are of Australian manufacture.

## LIST OF CONTENTS

Title Page.  
List of Contents.  
Receiving Valve Ratings according to new RMA system.  
Outlines.  
Conversion Factors.  
Bases and Dimensions.  
Triode Output Stages.  
Resistance Coupled Pentodes.  
Filament Voltage V. Filament Current.\*

**1A4-P\*\***

1A7-G

See under 1A7-GT°

**1A7-GT** ✓

**1B5/25S\*\*** —

**1C4\*\*** —

**1C6\***

Combined with 1C7-G

**1C7-G\***

**1D4\*\***

**1D5-GP\*** ✓

**1D8-GT** ✓

1F4

See under 1F5-G #

1F5-G

1F7-GV

**1H4-G**

1H5-G

See under 1H5-GT°

**1H5-GT** ✓

**1H6-G**

**1J6-G**

**1K4\***

Combined with 1K5-G

**1K5-G\***

**1K6\***

Combined with 1K7-G

**1K7-G\***

**1L5-G\***

**1M5-G\***

**1N5-G** ✓

See under 1N5-GT°

**1N5-GT**

**1P5-GT** ✓

<b>1Q5-GT</b>	<b>6V6</b>
<b>2A3</b>	Combined with 6V6-G
<b>2A5**</b>	<b>6V6-G</b>
<b>2A6**</b>	<b>6X5</b>
<b>2A7**</b>	Combined with 6X5-GT
<b>2B7**</b>	<b>6X5-G</b>
<b>5U4-G</b>	Combined with 6X5-GT
<b>5V4-G</b>	<b>6X5-GT</b>
<b>5Y3-G</b>	<b>19**</b>
<b>5Z3</b>	<b>24A**</b>
See under 5U4-G #	<b>25L6</b>
<b>6A7</b>	Combined with 25L6-GT
Combined with 6A8-G	<b>25L6-G</b>
<b>6A8</b>	Combined with 25L6-GT
Combined with 6A8-G	<b>25L6-GT</b>
<b>6A8-G</b>	<b>25Z5</b>
<b>6B6-G</b>	See under 25Z6-GT #
<b>6B7</b>	<b>25Z6</b>
<b>6B7S</b>	Combined with 25Z6-GT
<b>6B8-G</b>	<b>25Z6-G</b>
<b>6C6**</b>	Combined with 25Z6-GT
<b>6D6**</b>	<b>25Z6-GT</b>
<b>6F6</b>	<b>30**</b>
Combined with 6F6-G	<b>32**</b>
<b>6F6-G</b>	<b>34**</b>
<b>6G8-G</b>	<b>35**</b>
<b>6H6-G</b>	<b>42**</b>
<b>6J7</b>	<b>45**</b>
Combined with 6J7-G	<b>47**</b>
<b>6J7-G</b>	<b>57**</b>
<b>6J8-G</b>	<b>58**</b>
<b>6K7-GT*</b>	<b>75**</b>
<b>6K8-G</b>	<b>77**</b>
<b>6L6-G</b>	<b>78**</b>
<b>6U5/6G5</b>	<b>80**</b>
<b>6U7-G</b>	<b>83V**</b>
	<b>85*</b>
	<b>302</b>

\* Sheet to be issued in near future, as supplement to Radiotronics.

\*\* Sheet to be issued in the near future; will not be distributed with Radiotronics but will be available free on request.

# These two types are identical in electrical characteristics but differ in the base. For base connections see the Radiotron Characteristic Chart.

o These two types are identical as regards base connections and electrical characteristics. The GT valves are shorter, however, and have a base outside diameter greater by  $\frac{1}{8}$ " than that of the G valves.

# RADIOTRON

## VALVE DATA HANDBOOK

### LIST OF CONTENTS

The following list sets out in detail and in the correct order the sheets which should be included in the Radiotron Valve Data Handbook as at 31st October, 1941. Reference is to the front of each sheet only.

Sheets previously issued and not shown in the list should be regarded as out-of-date and removed from the Handbook. Subscribers may obtain missing sheets free of charge on application. For details of imported types not shown in this Handbook, reference should be made to the "Radiotron Characteristics Chart."

### CONTENTS

Sheet Description	Date
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Receiving Valve Outlines (Sheet 1) .....	April, 1941
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1K5-G (Sheet 2, curves) .....	Dec., 1940
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## VALVE DATA HANDBOOK

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5V4-G (Sheet 2, curves)	Nov., 1940
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5Y3-G (Sheet 2, curves)	Sept., 1940
6A7, 6A8-G (data)	May, 1940
6B6-G (Sheet 1, data)	July, 1941
6B6-G (Sheet 2, data)	July, 1941
6B7, 6B7S (data)	Sept., 1940
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6B8-G (Sheet 2, curves)	May, 1940
6C6 (data)	Oct., 1940
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6K7-GT (Sheet 1, data)	July, 1941
6K8-G (Sheet 1, data)	Sept., 1940
6L6, 6L6-G (Sheet 1, data)	Sept., 1940
6L6, 6L6-G (Sheet 2, data)	Sept., 1940
6L6-G (Sheet 3, curves)	April, 1937
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6V6-G (Sheet 3, curves)	Aug., 1941
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75 (data)	Oct., 1940
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80, 83V (data)	Oct., 1940
85 (Sheet 1, data)	July, 1941
302 (data)	Feb., 1941
1603 (data)	Dec., 1940

## CORRECTIONS

In order to bring your Data Sheets up to date, would you kindly make the following corrections to existing sheets as under:—

- 1A7-G: Mounting Position to read "Any".  
On curve on reverse side of sheet, change to read "Oscillator grid milliamperes."
- 1G4-G: Under Operating Conditions and Characteristics, Filament Voltage to read "1.4 d-c volts".
- 5Z3: This sheet is out of date and should be removed. For electrical characteristics of type 5Z3 see 5U4-G (not 5V4-G as erroneously given previously).
- 6A7: Control Grid (grid No. 4) voltage should read "min. volts" (not max. volts). Cathode Resistor should read "ohms" (not ma.).
- 6A8-G: Direct Interelectrode Capacitances should be deleted as applying only to type 6A8. For approximate capacitances refer to type 6A7.
- 6C6: Grid to Plate Capacitance (pentode connection) should read "0.007 max."
- 6C8-G: Add "Mounting Position—Any".
- 6D6: Grid to Plate Capacitance should read "0.007 max."
- 6H6-G: Add "Mounting Position—Any".
- 6J5-G: Add "Mounting Position—Any".
- 6K8-G: Mounting Position to read "Any".  
Pin 8 to read "Cathode and deflector plates".  
Triode Plate Voltage to read "125 max. volts".  
Add "Triode Plate Dissipation 0.75 max. watt".
- 6Q7-G: Add "Mounting Position—Any".
- 6R7-G: Add "Mounting Position—Any".

# CORRECTIONS

6V6-G: Add "Mounting Position—Any".  
Load Resistance (Single-Valve Amplifier Class A1) to read "5000 ohms".  
Add at foot of data, Push-Pull Amplifier Class AB1, "Load Resistance 10000, 8000 ohms."

6X5-G: Add "Mounting Position—Any".

6Y6-G: Add "Mounting Position—Vertical".  
Horizontal operation permitted if pins 2 and 7 are in a vertical plane.  
Under Static and Dynamic Characteristics add "Amplification Factor (approx.) 65, 125".  
Plate and Screen Dissipation (total) to read "12.5 watts".

Max.-Sig. D.C. Plate Current (200 volt conditions) to read "64 mA".

Harmonic Distortion, Total (135 volt conditions) to read "12.0%".

Under 200 volt conditions, Second Harmonic should read "8.5%" and Third Harmonic should read "8.5%".

6Z7-G: Add "Mounting Position—Any".

19: Maximum Overall Length should read 4-3/16".  
Add "Mounting Position—Vertical, Base Down".  
Horizontal operation permitted if plane of filament is vertical.

25A6, 25A6-G: Add "Mounting Position—Any".

25Z5: Maximum Overall Length to read 4-3/16".  
Under Voltage Doubler to read—  
"Heater 25 volts".

25Z6-G: Add "Mounting Position—Any".

The following earlier sheets have been superseded and should be removed from your binder: 6C8-G, 6E5, 6G5, 6G6-G, 6L5-G, 6S7-G (6T7-G on other side), 6U5.  
The following new sheets should be inserted in your binder: 6C8-G, 6E5, 6G6-G, 6L5-G, 6S7-G, 6T7-G, 6U5/6G5.

# RADIOTRON

## CLASSIFICATION OF AUSTRALIAN - MADE RECEIVING TYPES

**GENERAL NOTES.** In the case of multiple types individual units are shown under the correct classification. The additional units (e.g., the diodes of a diode, triode) may be neglected altogether or used in another portion of the circuit.

For complete list of Australian-made receiving valves see Price List.

### VALVES FOR BATTERY-OPERATED EQUIPMENT.

	1.4 Volt	2.0 Volt	
	Octal Bases	Old Style Bases	Octal Bases
General Purpose Triodes . . . . .	*1N5-GT	..	*1K5-G
	..	*1K4 ≡	..
	..	*1K6 ≡	*1K7-G
Power Amplifier Triodes . . . . .	*1Q5-GT	..	..
	*1D8-GT	..	..
	..	30 ≡	1H4-G
High-Mu Triodes . . . . .	1H5-GT	..	..
	1D8-GT	..	..
	*1N5-GT	..	..
Class B Twin Triodes . . . . .	..	1B5/25S ≡	1H6-G
	..	19 ≡	1J6-G
Diode, Triode Types . . . . .	1H5-GT	..	..
	..	1B5/25S ≡	1H6-G
Diode, Triode, Pentode . . . . .	..	*1K6 ≡	*1K7-G
	1D8-GT	..	..
Diode, Pentode Types . . . . .	..	1K6 ≡	1K7-G
	1N5-GT	..	..
R-F Amplifiers . . . . .	..	1K4 ≡	1K5-G
	..	1K6 ≡	1K7-G
	..	32	..
Super-Control R-F Amplifiers . . . . .	1P5-GT	..	..
	..	1A4-P ≡	1D5-GP
	..	1C4 ≡	1M5-G
Converters . . . . .	..	34	..
	1A7-GT	..	..
Beam-Power and Pentode Output Valves . . . . .	..	1C5 ≡	1C7-G
	1Q5-GT	..	..
	1D8-GT	..	..
..	..	1D4 ≡	1L5-G

\* Connected as a triode.  
 ≡ Identical except for base.  
 ≡ Minor differences only in addition to base.

# RADIOTRON

## CLASSIFICATION OF AUSTRALIAN - MADE RECEIVING TYPES

### VALVES FOR MAINS-OPERATED EQUIPMENT.

	2.5 Volt Old Style Bases	6.3 Volt Old Style Bases	Octal Bases
General Purpose Triodes . . . . .	*57 ≡	*6C6 ≡	*6J7-G
	.. ≡	*6B7 ≡	*6B8-G
Power Amplifier Triodes . . . . .	*57 ≡	85	*6J7-G
	.. ≡	*6C6 ≡	*6B8-G
	*2A5 ≡	*42 ≡	*6F6-G
High-Mu Triodes . . .	45	..	*6V6-G
	.. ≡	75 ≡	6B6-G
Diode, Triode Types . .	.. ≡	75 ≡	6B6-G
	.. ≡	*6B7 ≡	*6B8-G
Diode, Pentode Types	.. ≡	85	..
	.. ≡	6B7 ≡	6B8-G
Diode, Super-Cont. Pentode . . . . .	.. ≡	6B7S ≡	6G8-G
	.. ≡	77 ≡	6J7-G
R-F Amplifiers . . . . .	57 ≡	6C6 ≡	6J7-G
	.. ≡	6B7 ≡	6B8-G
Super-Control R-F Amplifiers . . . . .	24A	..	..
	58 ≡	6D6 ≡	6U7-G
	.. ≡	6B7S ≡	6G8-G
Converters . . . . .	.. ≡	78 ≡	6K7-GT
	35	..	..
	.. ≡	6A7 ≡	6A8-G
	.. ≡	..	6J8-G
Beam-Power and Pentode Output Valves . . . . .	.. ≡	..	6K8-G
	57 ≡	6C6 ≡	6J7-G
	.. ≡	6B7 ≡	6B8-G
	2A5 ≡	42 ≡	6F6-G
Rectifiers . . . . .	.. ≡	..	6V6-G
	47 ≡	42 ≡	6F6-G
Non-microphonic Pentode	6X5-GT, { 80 } { 5Y3-G }	{ 83V } { 5V4-G }	1603

\* Connected as a triode.  
 ≡ Identical except for base and possibly heater voltage.  
 ≡ Minor differences in addition to base and/or heater voltage.

# RADIOTRON

## RECEIVING VALVE

### RATINGS ACCORDING TO R.M.A.

M8-210: It shall be standard to interpret the ratings on receiving types of valves according to the following conditions:—

#### 1. Cathode.

The heater or filament voltage is given as a normal value unless otherwise stated. This means that transformers or resistances in the heater or filament circuit should be designed to operate the heater or filament at rated value for full-load operating conditions under average supply-voltage conditions. A reasonable amount of leeway is incorporated in the cathode design so that moderate fluctuations of heater or filament voltage downward will not cause marked falling off in response; also, moderate voltage fluctuations upward will not reduce the life of the cathode to an unsatisfactory degree.

##### (A) 1.4-Volt Battery Valve Types.

The filament power supply may be obtained from dry-cell batteries, from storage batteries or from a power line. With dry-cell battery supply the filament may be connected either directly across a battery rated at a terminal potential of 1.5 volts, or in series with the filaments of similar valves across a power supply consisting of dry-cells in series. In either case, the voltage across each 1.4 volt section of filament should not exceed 1.6\* volts. With power-line or storage-battery supply, the filament may be operated in series with the filaments of similar valves. For such operation, design adjustments should be made so that, with valves of rated characteristics, operating with all electrode voltages applied and on a normal line voltage or on a normal storage-battery voltage of 2.0 volts per cell (without a charger) or 2.2 volts per cell (with a charger), the voltage drop across each 1.4 volt section of filament will be maintained, within a range of 1.25 to 1.4 volts with a nominal centre of 1.3 volts. In order to meet the recommended conditions for operating filaments in series from dry-battery, storage-battery, or power-line sources it may be necessary to use shunting resistors across the individual 1.4 volt sections of filament.

##### (B) 2.0-Volt Battery Valve Types.

The 2.0-volt line of valves is designed to be operated with 2.0 volts across the filament. In all cases the operating voltage range should be maintained within the limits of 1.8 volts to 2.2 volts.

#### 2. Positive Potential Electrodes.

The power sources for the operation of radio equipment are subject to variations in their terminal potential. Consequently the maximum ratings shown on the R.M.A. Valve Data Sheets have been established for certain design centre voltages which experience has shown to be representative. The design centre voltages to be used for the various power supplies together with other rating considerations are as given below:

*\*This Company recommends a maximum voltage of 1.54 volts.*

AMALGAMATED WIRELESS VALVE Co. PTY. LTD.

JUNE, 1941

SYDNEY, AUSTRALIA

# RADIOTRON

## RECEIVING VALVE

### RATINGS ACCORDING TO R.M.A.

#### (A) A.C. or D.C. Power Line Service in U.S.A.

The design centre voltage for this type of power supply is 117 volts. The maximum ratings of plate voltages, screen-supply voltages, dissipations, and rectifier output currents are design maximums and should not be exceeded in equipment operated at a line voltage of 117 volts.

#### (B) Storage-Battery Service.

When storage-battery equipment is operated without a charger, it should be designed so that the published R.M.A. maximum values of plate voltages, screen-supply voltages, dissipations and rectifier output currents are never exceeded for a terminal potential at the battery source of 2.0 volts per cell. When storage-battery equipment is operated with a charger it should be designed so that 90 per cent. of the same R.M.A. values are never exceeded for a terminal potential at the battery source of 2.2 volts.

#### (C) "B"-Battery Service.

The design centre voltage for "B" batteries is the normal voltage rating of the battery block, such as 45 volts, 90 volts, etc. Equipment should be designed so that under no condition of battery voltage will the plate voltages, the screen-supply voltages, or dissipations ever exceed the recommended respective maximum values shown in the data for each valve type by more than 10 per cent.

#### (D) Other Considerations.

##### (a) Class A1 Amplifiers.

The maximum plate dissipation occurs at the "Zero-Signal" conditions. The maximum screen dissipation usually occurs at the condition where the peak-input signal voltage is equal to the bias voltage.

##### (b) Class B Amplifiers.

The maximum plate dissipation theoretically occurs at approximately 63 per cent. of the "Maximum-Signal" condition, but practically may occur at any signal voltage value.

##### (c) Converters.

The maximum plate dissipation occurs at the "Zero-Signal" condition and the frequency at which the oscillator-developed bias is a minimum. The screen dissipation for any reasonable variation in signal voltage must never exceed the rated value by more than 10 per cent.

##### (d) Screen Ratings.

When the screen voltage is supplied through a series voltage-dropping resistor, the maximum screen voltage rating may be exceeded, provided the maximum screen dissipation rating is not exceeded at any signal condition, and the maximum screen voltage rating is not exceeded at the minimum-signal condition. Provided these conditions are fulfilled, the screen-supply voltage may be as high as, but not above, the maximum plate voltage rating.

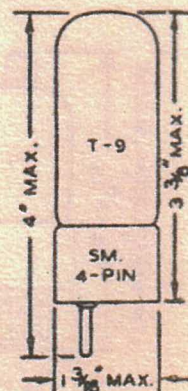
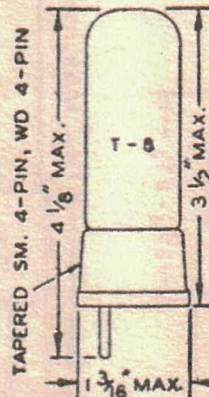
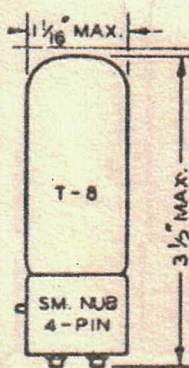
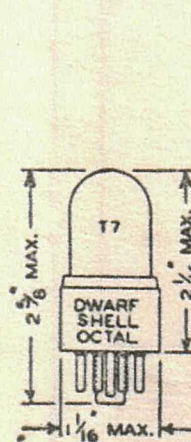
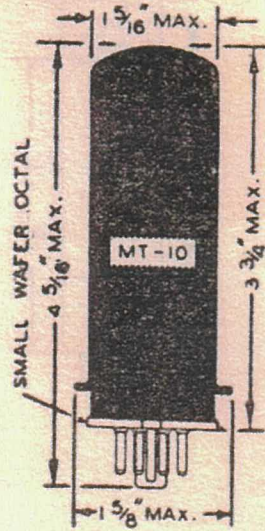
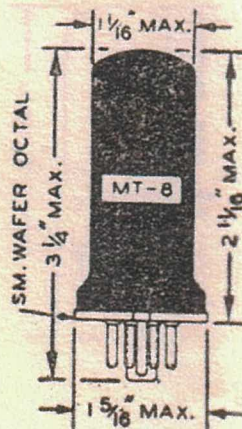
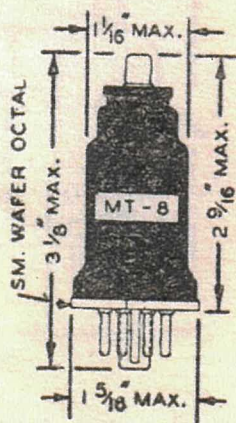
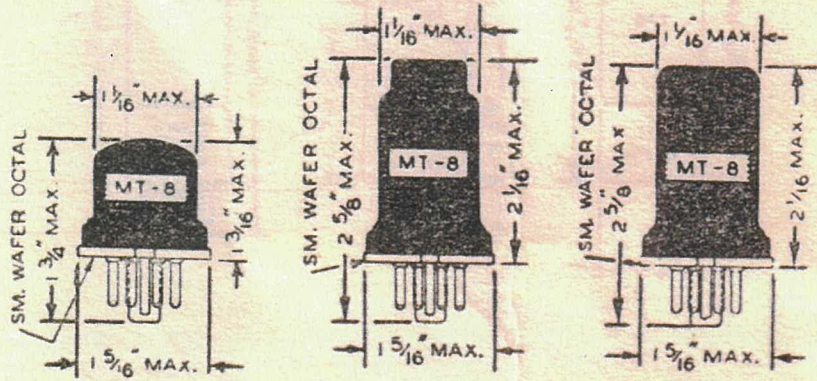
### 3. Typical Operation.

For many receiving valves, the data show typical operating conditions in particular services. These typical operating values are given to show concisely some guiding information for the use of each type. They are not to be considered as ratings, because the valve can be used under any suitable conditions within its rating limitations.

# RADIOTRON

## RECEIVING VALVE OUTLINES

SM. = SMALL  
MED. = MEDIUM



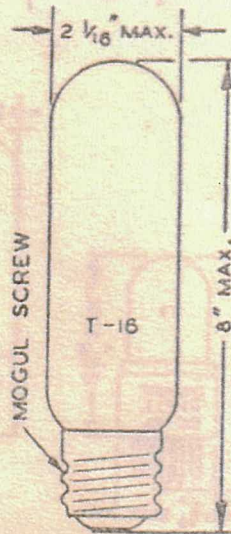
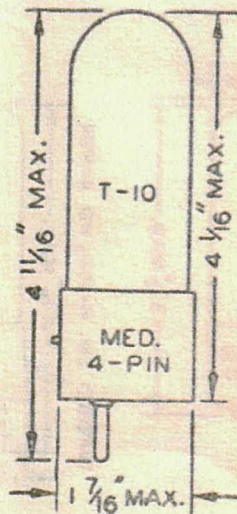
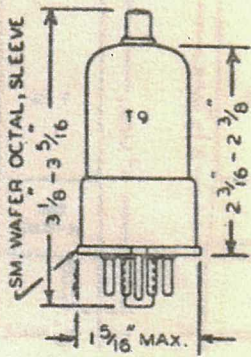
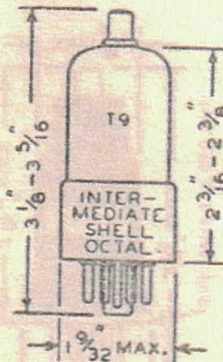
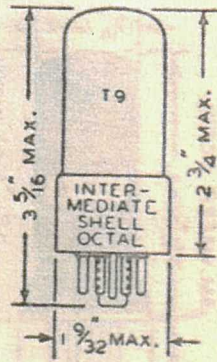
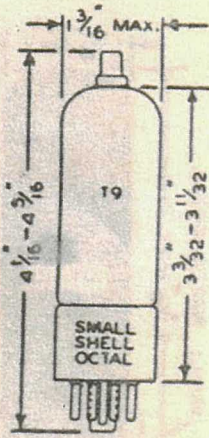
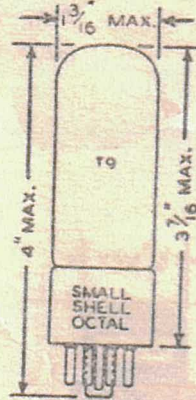
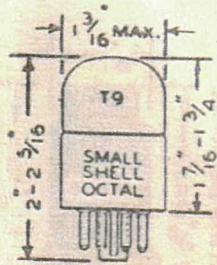
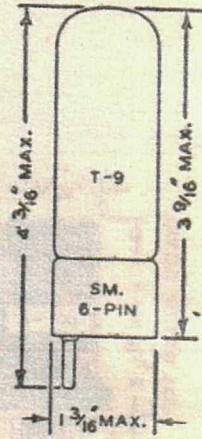
AMALGAMATED WIRELESS VALVE Co. PTY. LTD.

APRIL, 1941

SYDNEY, AUSTRALIA

# RADIOTRON

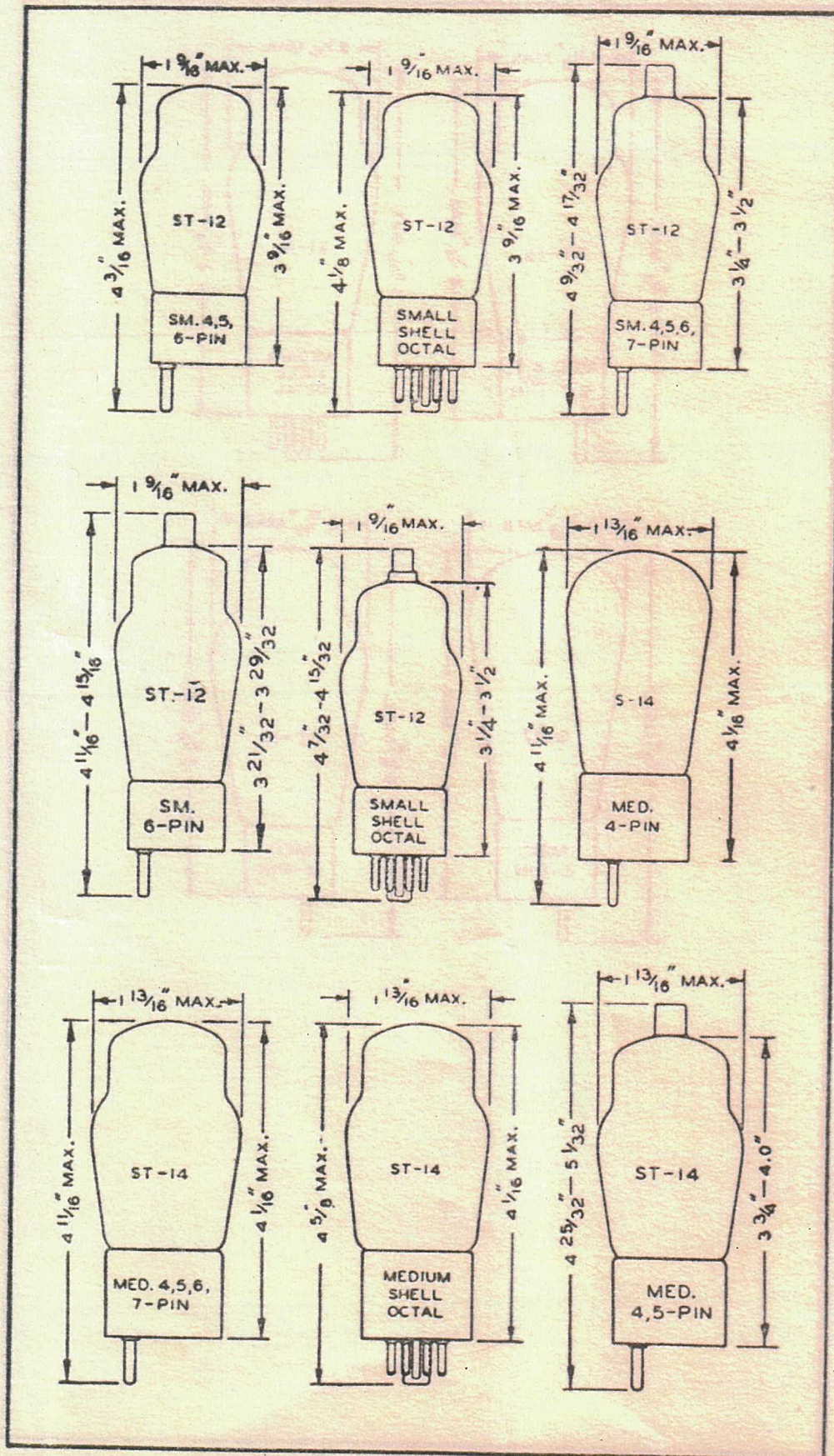
## RECEIVING VALVE OUTLINES



# RADIOTRON

OUT-  
LINES  
SHEET 2

## RECEIVING VALVE OUTLINES



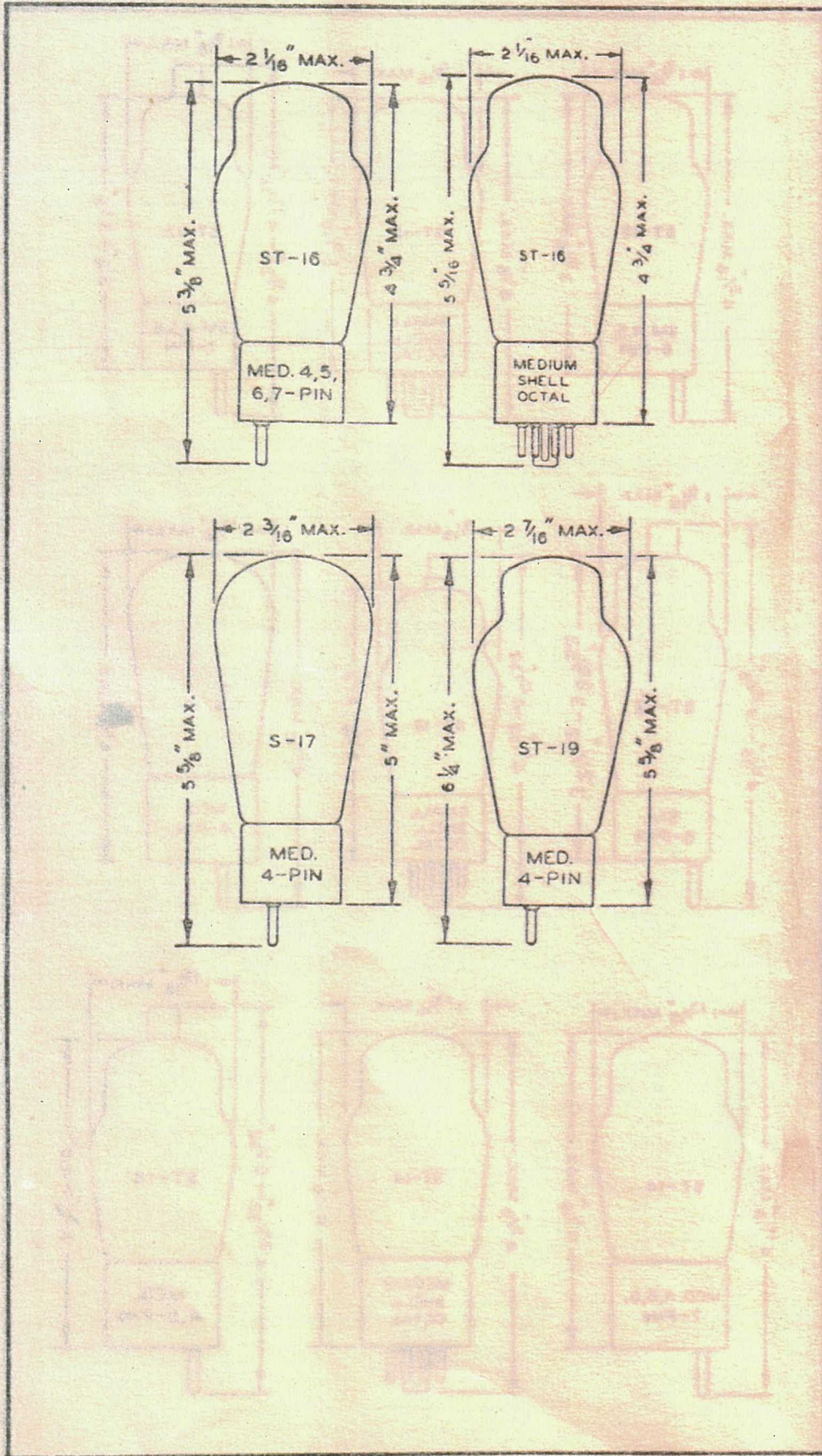
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

APRIL, 1941

SYDNEY, AUSTRALIA

# RADIOTRON

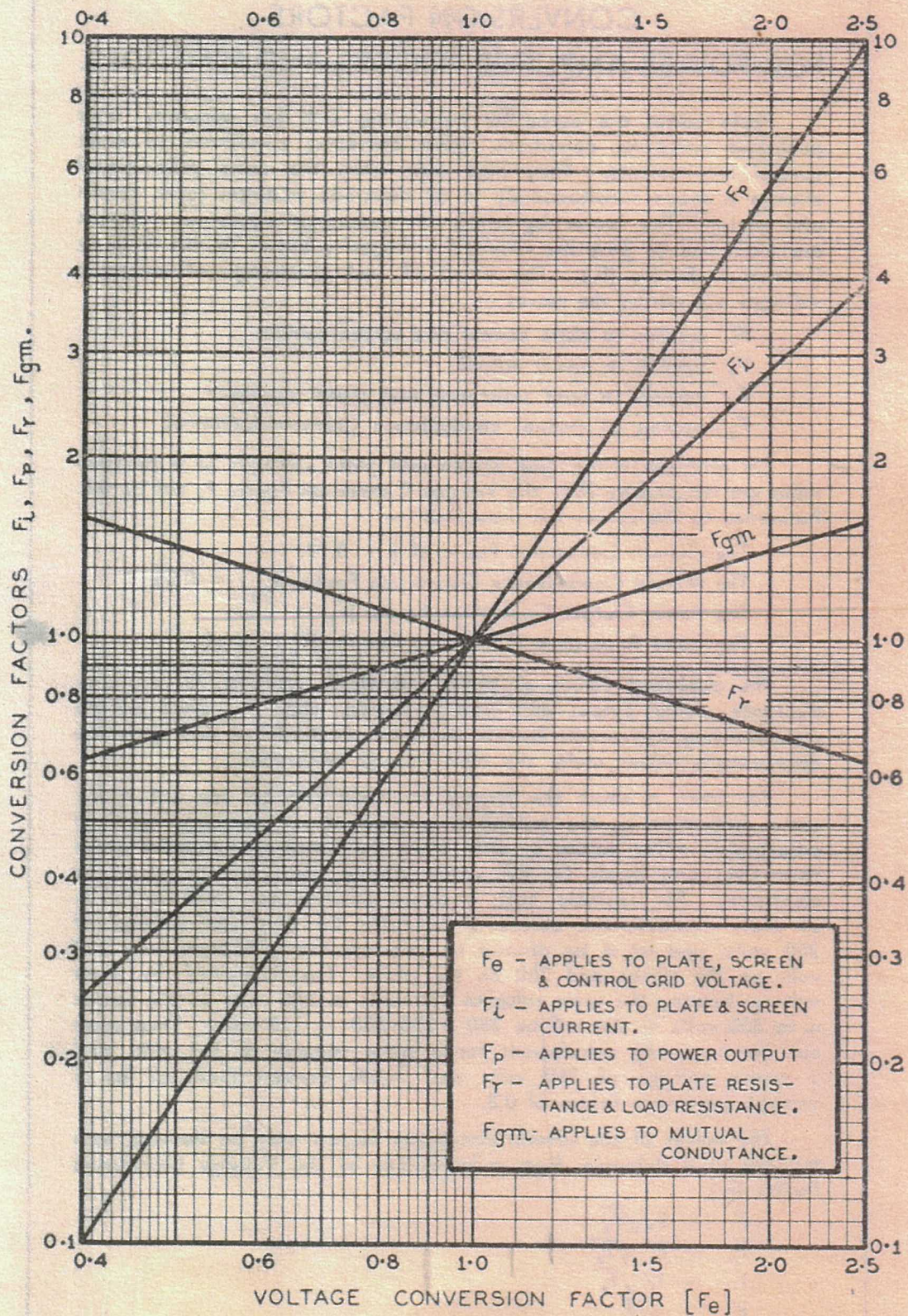
## RECEIVING VALVE OUTLINES



# RADIOTRON

## CONVERSION FACTORS

FOR POWER AMPLIFIER TRIODES AND PENTODES



# RADIOTRON

## CONVERSION FACTORS

### FOR POWER AMPLIFIER TRIODES AND PENTODES.

These curves are useful for calculating with fair accuracy, from published operating conditions, other operating conditions to meet special requirements. They hold only when the same proportional change is made simultaneously in all electrode voltages (grid, screen and plate). The factor by which the published operating voltages are multiplied to give the required voltages is known as the Voltage Conversion Factor ( $F_v$ ). The effect of such a change of electrode voltages is given by the curves —

- $F_i$  applies to plate current and screen current.
- $F_p$  applies to power output.
- $F_r$  applies to load resistance and plate resistance.
- $F_{gm}$  applies to mutual conductance (transconductance).

For example, if the grid, screen and plate voltages of a pentode valve are reduced by 20% the Voltage Conversion Factor  $F_v$  will be 0.8. Reference to the curves will show that —

- The Current Conversion Factor ( $F_i$ ) = 0.72.
- The Mutual Conductance Conversion Factor ( $F_{gm}$ ) = 0.89.
- The Power Output Conversion Factor ( $F_p$ ) = 0.57.
- The Load Resistance Conversion Factor ( $F_r$ ) = 1.12.

The published values of plate and screen currents, mutual conductance, power output and load resistance, when multiplied by the corresponding conversion factors as determined above, will give the approximate values under the new voltage conditions.

For cases in which the desired electrode voltages are not in the same proportion to the published voltages it is necessary to make adjustments either before or after using the Conversion Factors which themselves only apply for the same voltage conversion factor of all electrodes. For example, take a power pentode for which a family of plate characteristic curves is available for a screen voltage of 250 volts, and let it be desired to calculate the conditions with 200 volts on the screen and 250 on the plate. First calculate the plate voltage bearing the same ratio to 250 volts as 250 volts on the screen is to 200 volts — this will be  $250 \times 250 / 200 = 312$  volts. Then carry out the necessary calculations for a plate voltage of 312 volts and a screen voltage of 250 volts and finally convert them all by a voltage conversion factor of 0.8.

The values of the several conversion factors may be derived, with the aid of a slide-rule, from a knowledge of the Voltage Conversion Factor ( $F_v$ ).

$$\begin{aligned} F_i &= F_v \sqrt{F_v} \\ F_p &= F_v^2 \sqrt{F_v} \\ F_r &= 1/\sqrt{F_v} \\ F_{gm} &= \sqrt{F_v} \end{aligned}$$

# RADIOTRON

## 5U4-G

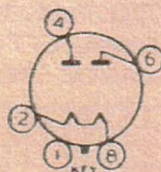
5U4-G



### FULL-WAVE HIGH-VACUUM RECTIFIER

Types 5U4-G and 5Z3 are similar electrically.

Filament	Coated	
Voltage	5.0	a-c volts
Current	3.0	amp.
Maximum Overall Length		5-5/16"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base		Medium Shell Octal 5-Pin
Pin 1 - No Connection		Pin 6 - Plate #1
Pin 2 - Filament		Pin 8 - Filament
Pin 4 - Plate #2		
Mounting Position		Vertical $\diamond$



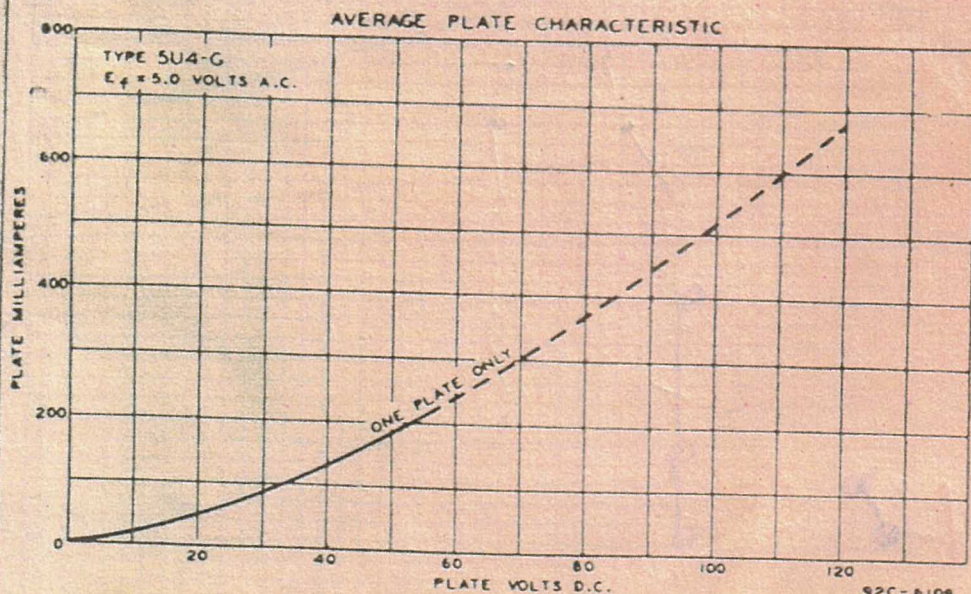
BOTTOM VIEW (G-5T)

#### FULL-WAVE RECTIFIER

Peak Inverse Voltage	1550 max. volts
Peak Plate Current per Plate	675 max. ma.
<i>Typical Operation with Condenser-Input Filter:</i>	
A-C Plate Voltage per Plate (RMS)	450 max. volts
Total Effective Plate-Supply Impedance per Plate $\Delta$	75 min. ohms
D-C Output Current	225 max. ma.
<i>Typical Operation with Choke-Input Filter:</i>	
A-C Plate Voltage per Plate (RMS)	550 max. volts
Input-Choke Inductance	3 min. henries
D-C Output Current	225 max. ma.

$\diamond$  Horizontal operation permitted if pins 1 and 4 are in vertical plane.

$\Delta$  When a filter-input condenser larger than 40  $\mu$ f is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.



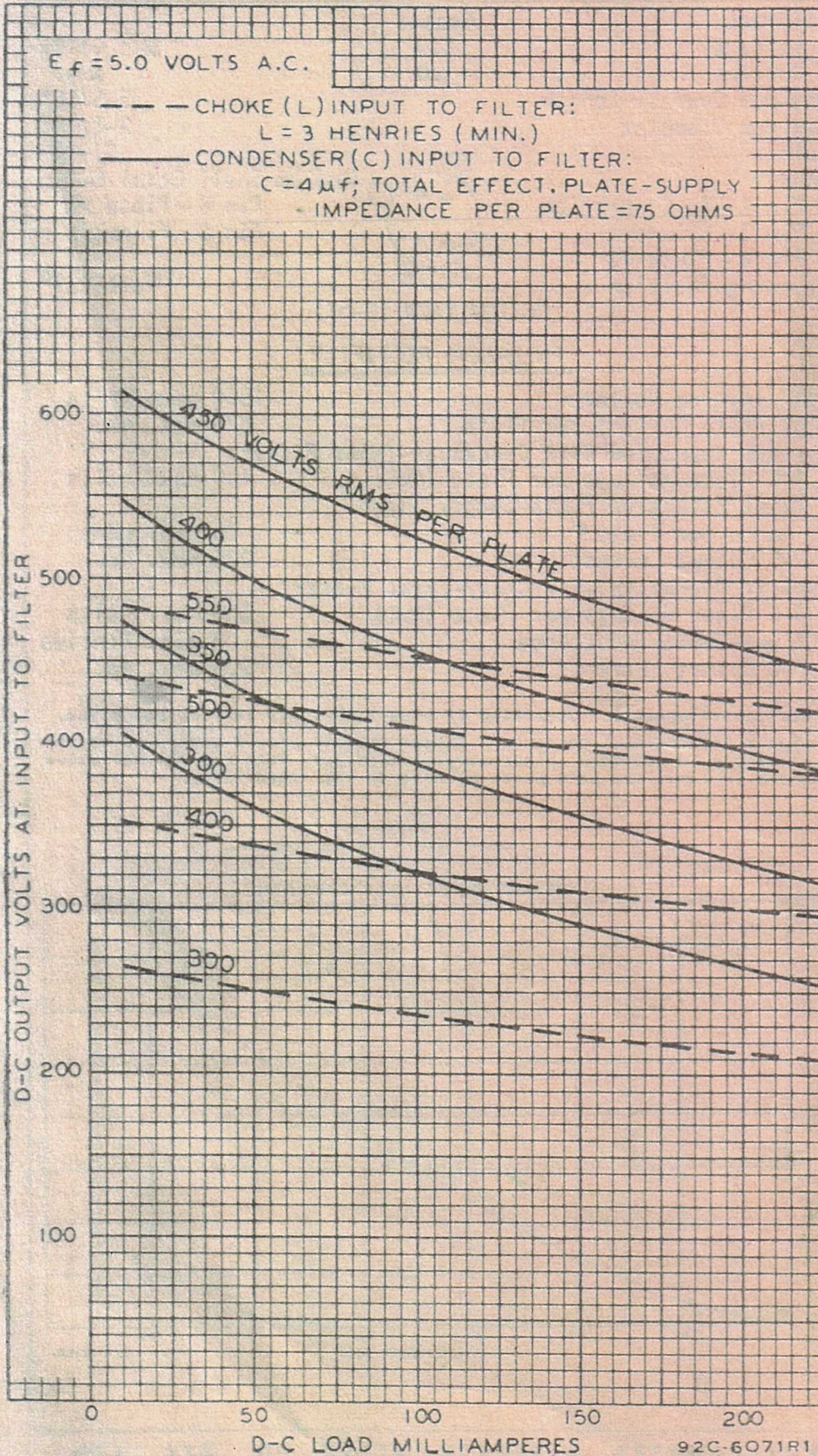
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
MAY, 1940  
SYDNEY, AUSTRALIA

5U4-G

# RADIOTRON

5U4-G

## OPERATION CHARACTERISTICS



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

MAY, 1940

92C-6071R1  
SYDNEY, AUSTRALIA

5V4-G  
SHEET 1

# RADIOTRON

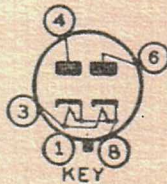
5V4-G *13/6*



## FULL-WAVE HIGH-VACUUM RECTIFIER

Heater	Coated Unipotential Cathode	
Voltage	5.0	a-c volts
Current	2.0	amp.
Maximum Overall Length		4-5/8"
Maximum Diameter		1-13/16"
Bulb		ST-14
Mounting Position		Any

Base	Medium Shell Octal 5-Pin
Pin 1-No Connection	Pin 6-Plate #1
Pin 2-Heater	Pin 8-Heater & Cathode
Pin 4-Plate # 2	



BOTTOM VIEW (G-5L)

FULL WAVE RECTIFIER

Peak Inverse Voltage	1400	max. volts
Peak Plate Current per Plate	525	max. mA.

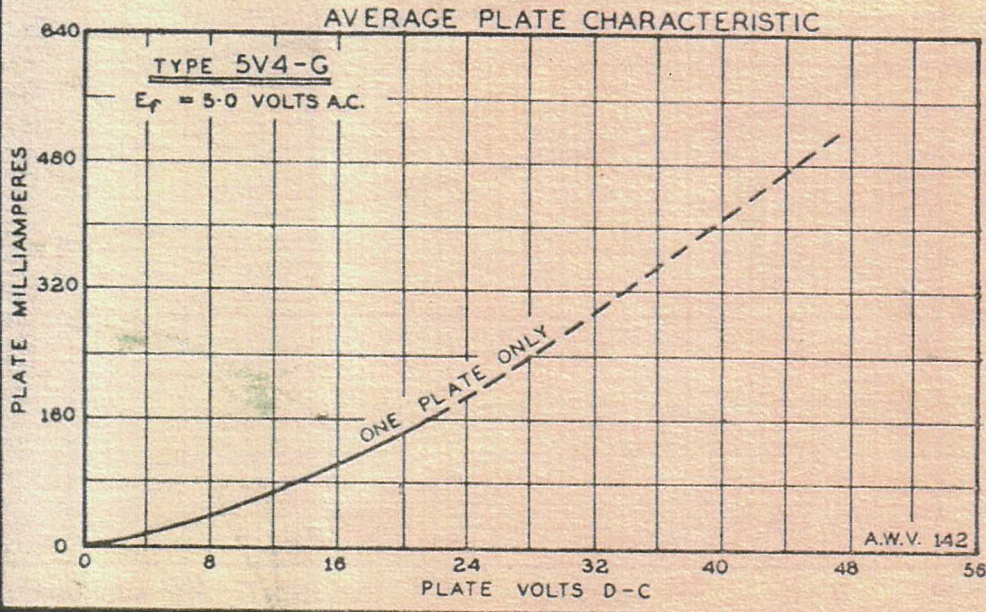
Typical Operation with Condenser-Input Filter:

A.C. Plate Voltage per Plate (RMS)	375	450	450	max. volts
Total Effective Plate Supply Impedance per Plate	65	65*	65*	min. ohms
Filter Input-Condenser Capacitance	40	4	8	max. $\mu$ F.
D-C Output Current	175	200	175	max. mA.

Typical Operation with Choke-Input Filter:

A-C Plate Voltage per Plate (RMS)	500	max. volts
Input Choke Inductance	4	min. henries
D-C Output Current	175	max. mA.

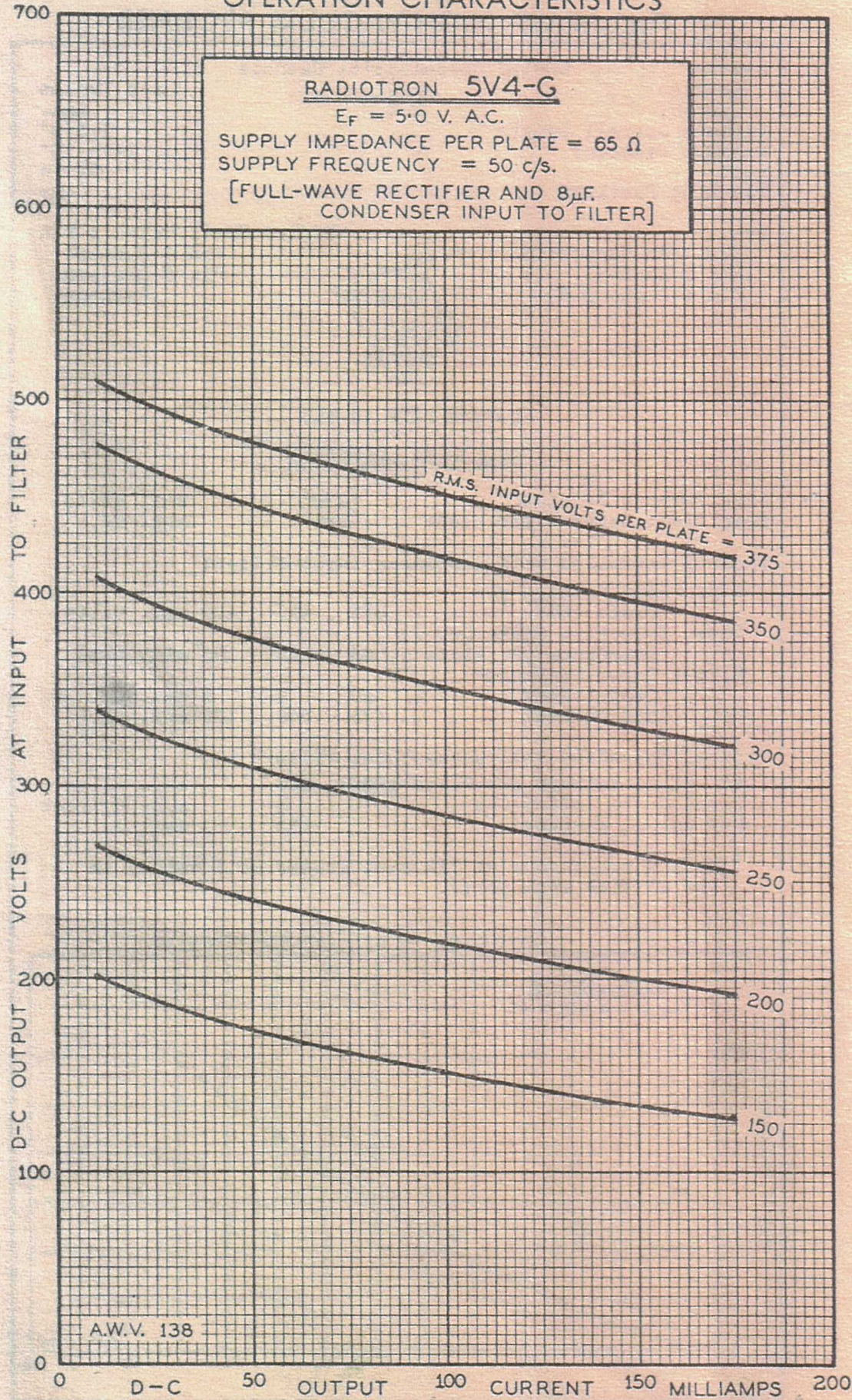
\* With a resistance of 125 ohms (rated at 3 watts) in series with each plate.



5V4-G

# RADIOTRON 5V4-G

## OPERATION CHARACTERISTICS



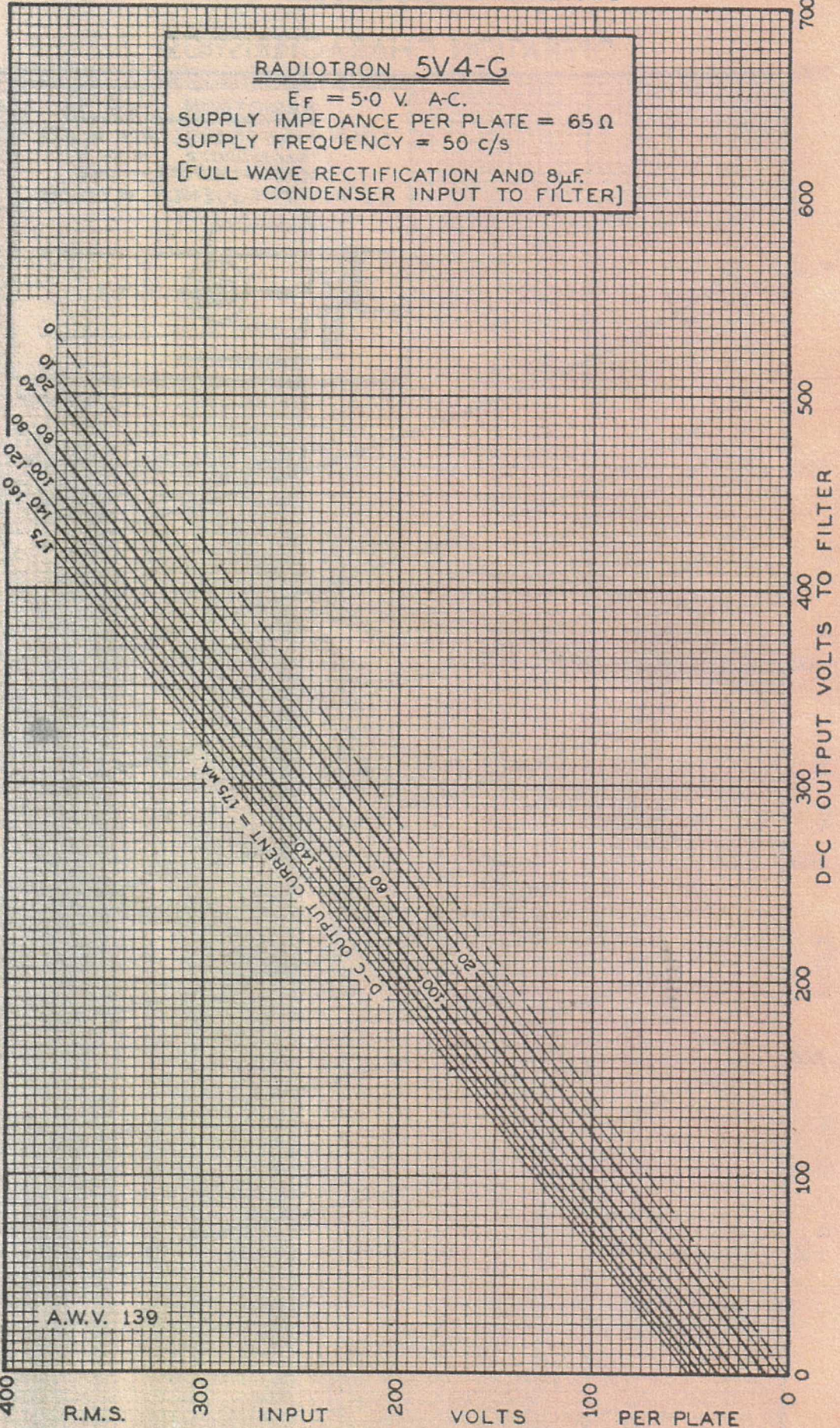
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
NOVEMBER, 1940 SYDNEY, AUSTRALIA

# RADIOTRON

## 5V4-G

### OPERATION CHARACTERISTICS

5V4-G  
SHEET 2



A.W.V. 139

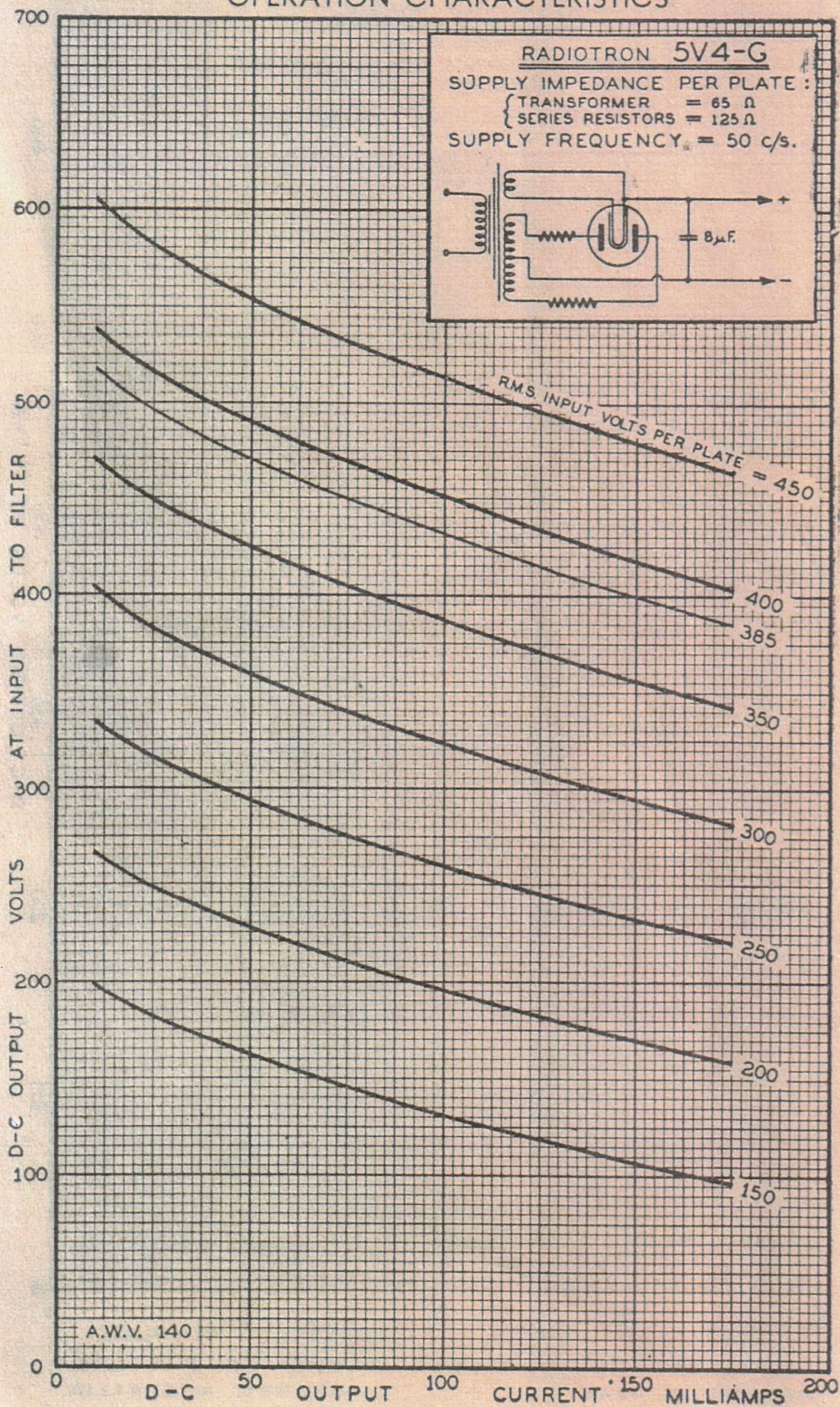
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
 NOVEMBER, 1940 SYDNEY, AUSTRALIA

5V4-G

# RADIOTRON

## 5V4-G

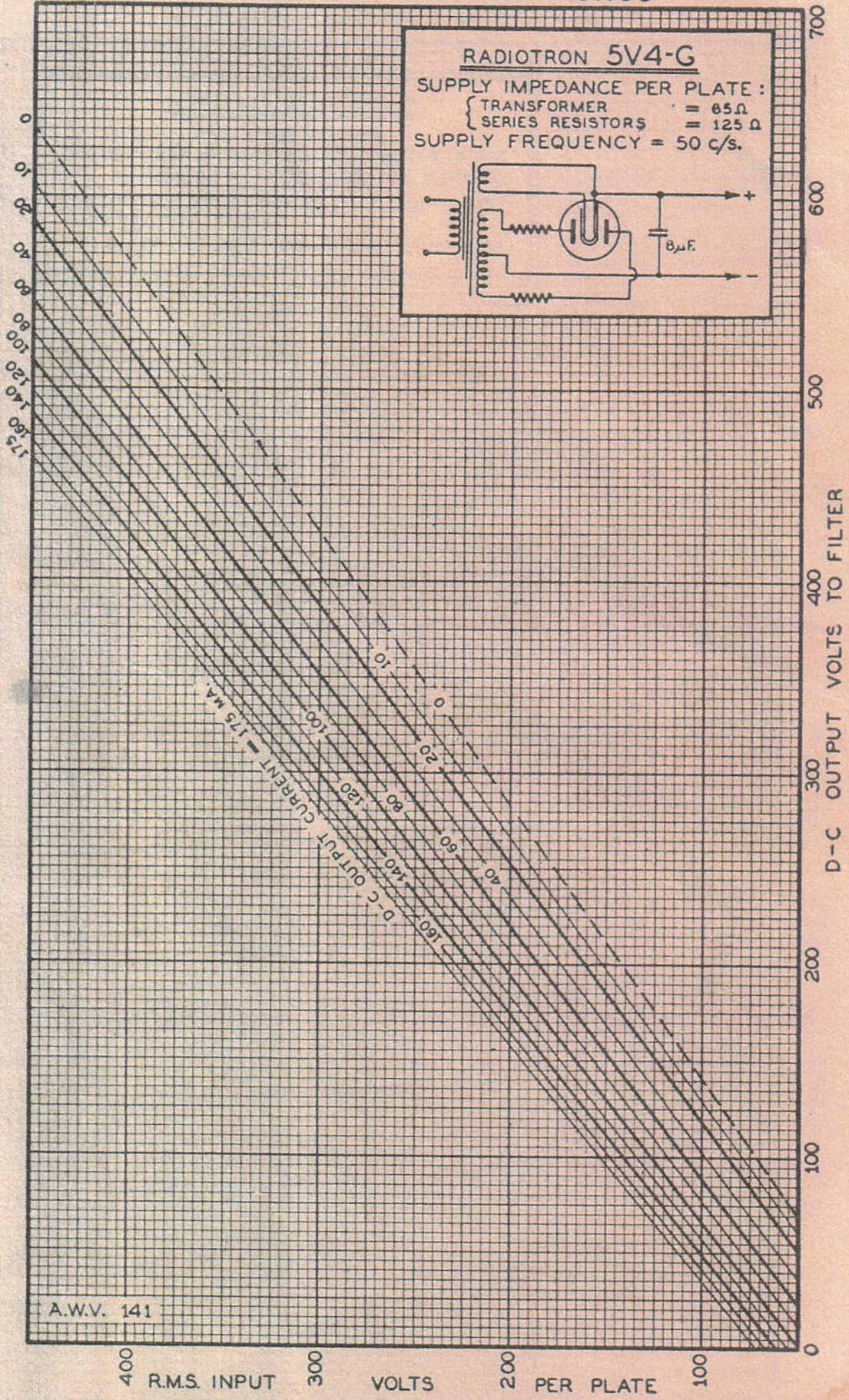
### OPERATION CHARACTERISTICS



# RADIOTRON 5V4-G

## OPERATION CHARACTERISTICS

**5V4-G**  
SHEET 3



A.W.V. 141

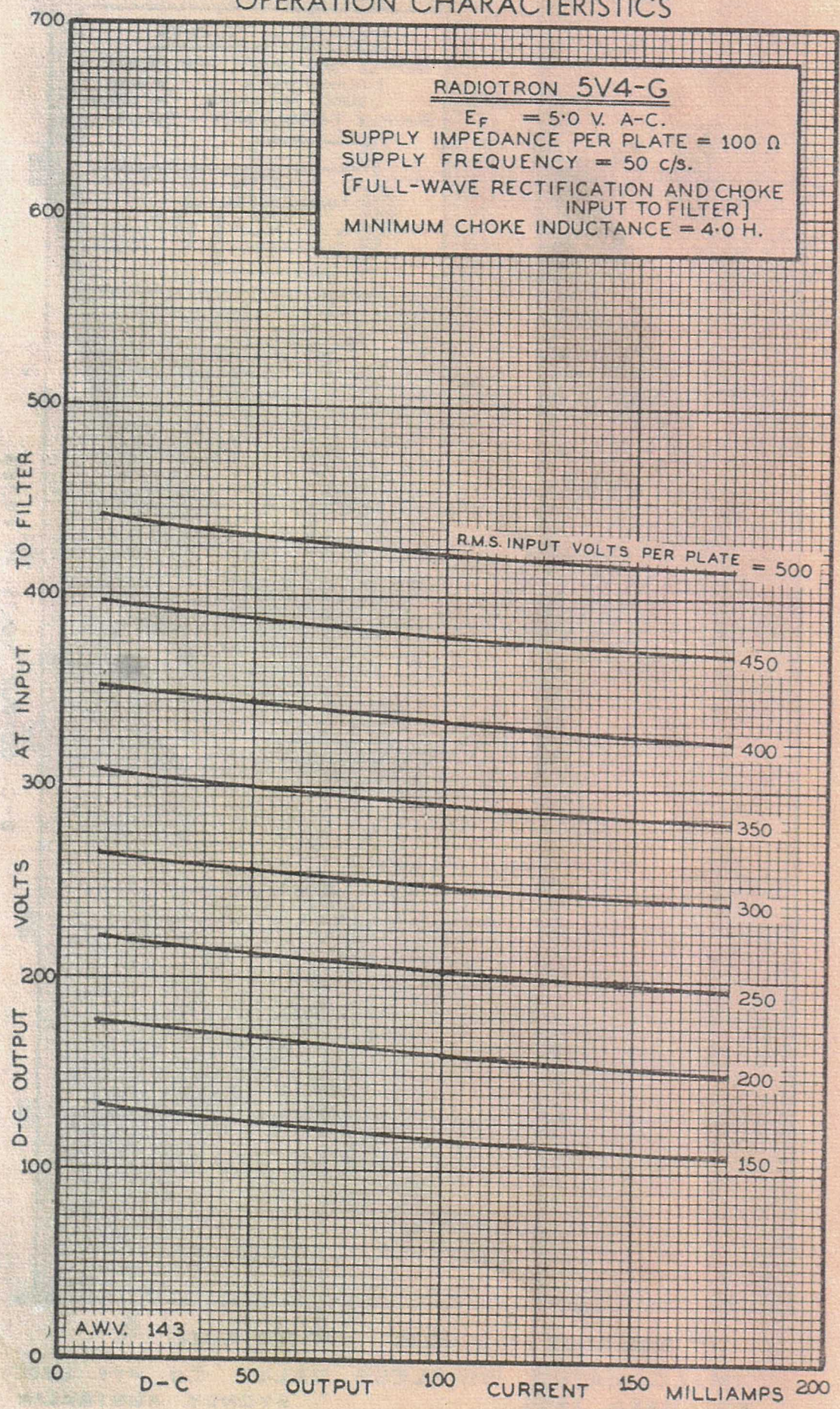
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
NOVEMBER. 1940  
SYDNEY. AUSTRALIA

5V4-G

# RADIOTRON 5V4-G

## OPERATION CHARACTERISTICS

RADIOTRON 5V4-G  
 $E_f = 5.0$  V. A-C.  
SUPPLY IMPEDANCE PER PLATE =  $100 \Omega$   
SUPPLY FREQUENCY = 50 c/s.  
[FULL-WAVE RECTIFICATION AND CHOKE  
INPUT TO FILTER]  
MINIMUM CHOKE INDUCTANCE = 4.0 H.



A.W.V. 143

# RADIOTRON

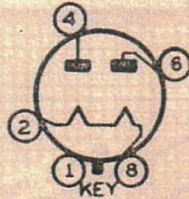
## 5Y3-G

5Y3-G  
SHEET 1

### FULL-WAVE HIGH-VACUUM RECTIFIER

Filament	Coated	
Voltage	5.0	a-c volts
Current	2.0	amp.
Maximum Overall Length		4-5/8"
Maximum Diameter		1-13/16"
Bulb		ST-14
Mounting Position		*Vertical
Base		Medium Shell Octal 5-Pin

Pin 1-No Connection  
Pin 2-Filament  
Pin 5-Plate # 2



Pin 6-Plate # 1  
Pin 8-Filament.

BOTTOM VIEW (G-5T)

#### FULL-WAVE RECTIFIER

Peak Inverse Voltage	1400	max. volts
Peak Plate Current per Plate	375	max. ma.

#### Typical Operation With Condenser-Input Filter:-

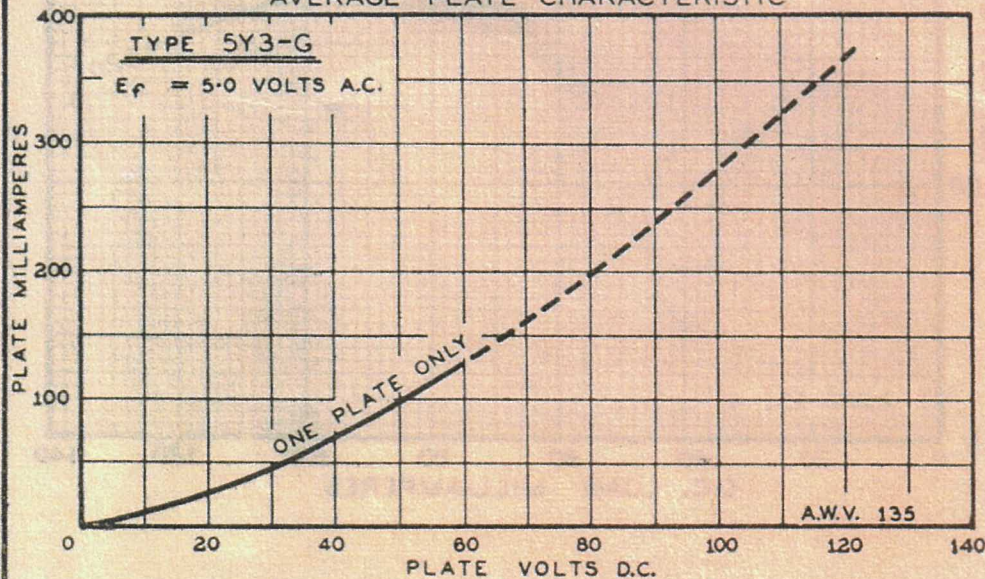
A-C Plate Voltage per Plate (RMS)	350	400	volts
Total Effective Plate Supply Impedance per Plate	10	80 min.	ohms
First Filter Condenser Capacitance	40	8 max.	μF.
D-C Output Current	125	125 max.	ma.

#### Typical Operation with Choke-Input Filter:-

A-C Plate Voltage per Plate (RMS)	500 max.	volts
Input-Choke Inductance	5 min.	henries
D-C Output Current	125 max.	ma.

\*Horizontal operation permitted if pins 1 and 8 are in horizontal plane.

#### AVERAGE PLATE CHARACTERISTIC

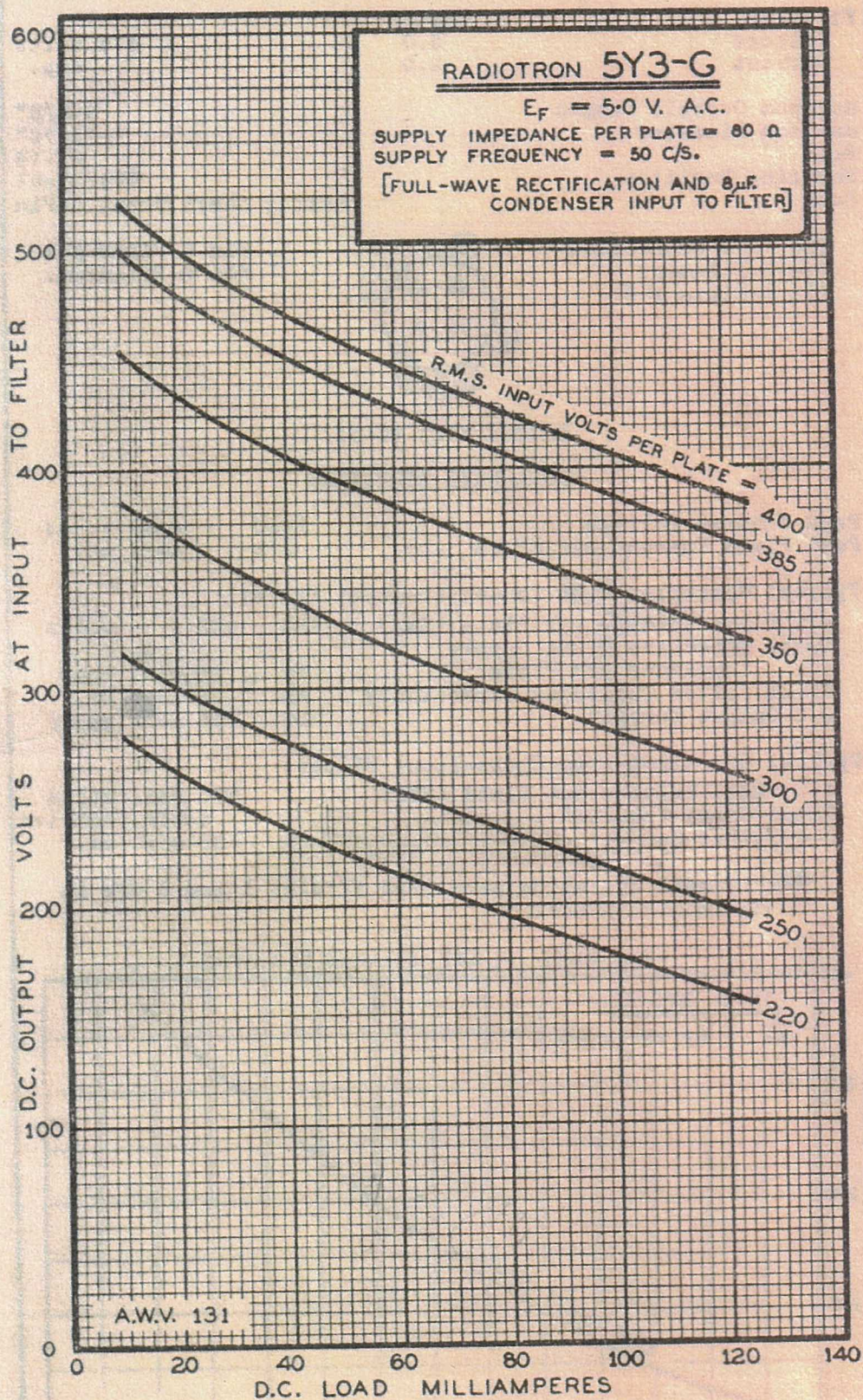


5Y3-G

# RADIOTRON

## 5Y3-G

### OPERATION CHARACTERISTICS

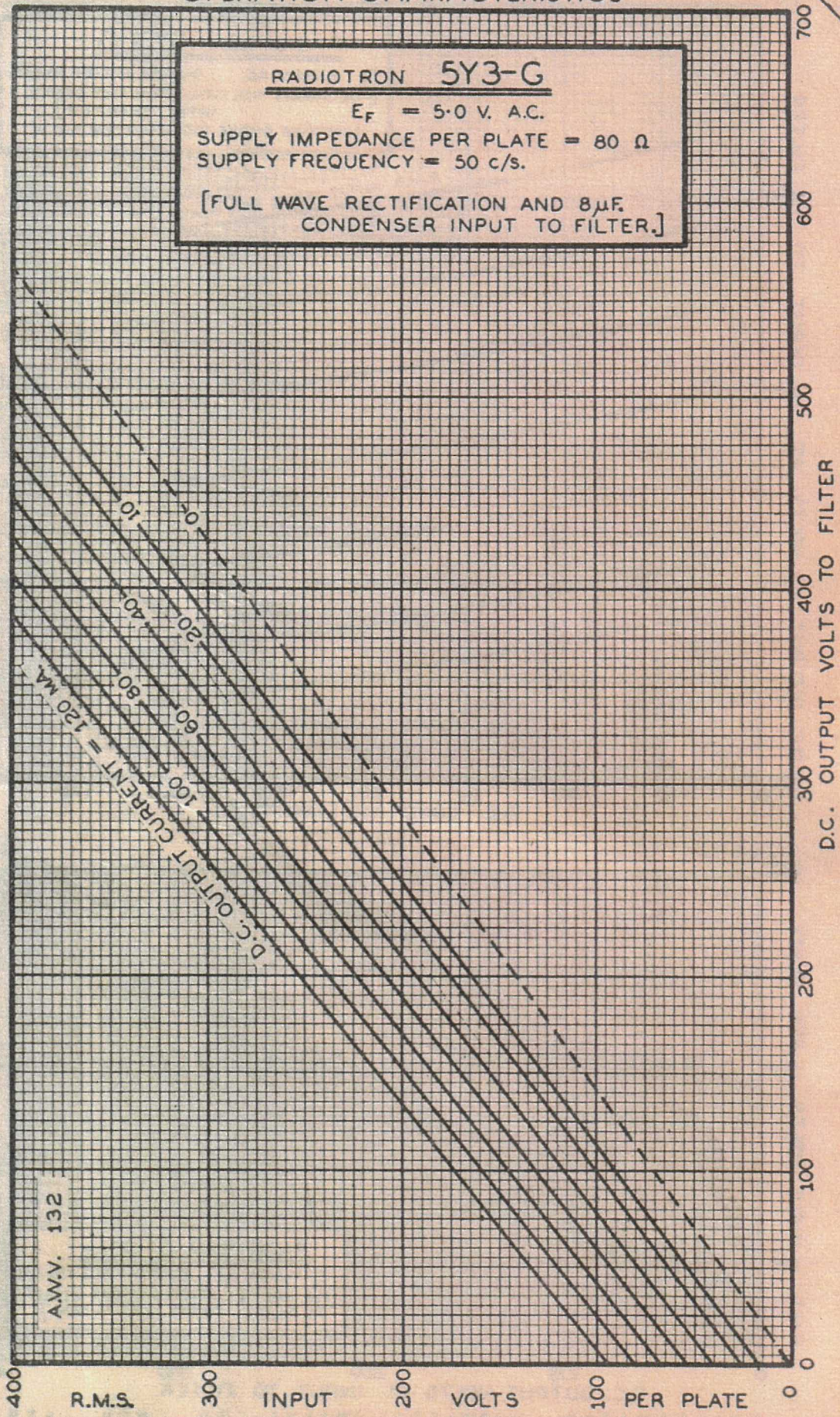


# RADIOTRON 5Y3-G

5Y3-G  
SHEET 2

## OPERATION CHARACTERISTICS

**RADIOTRON 5Y3-G**  
 $E_f = 5.0 \text{ V. A.C.}$   
SUPPLY IMPEDANCE PER PLATE =  $80 \Omega$   
SUPPLY FREQUENCY = 50 c/s.  
[FULL WAVE RECTIFICATION AND  $8 \mu\text{F}$ .  
CONDENSER INPUT TO FILTER.]

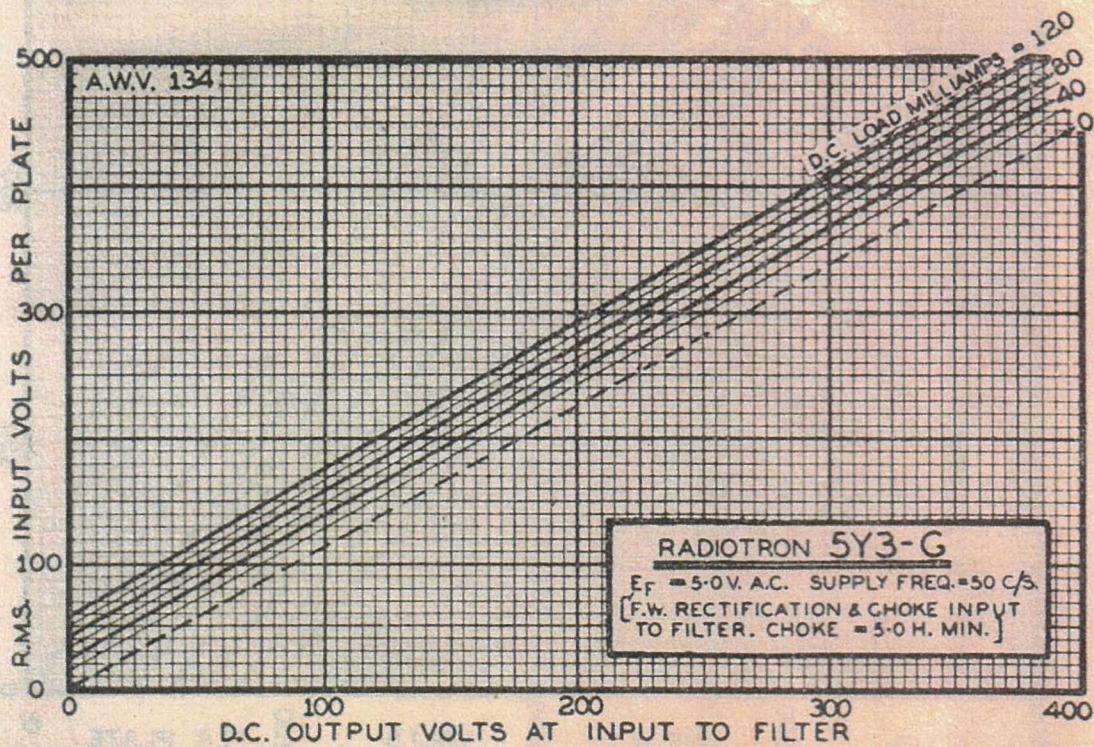
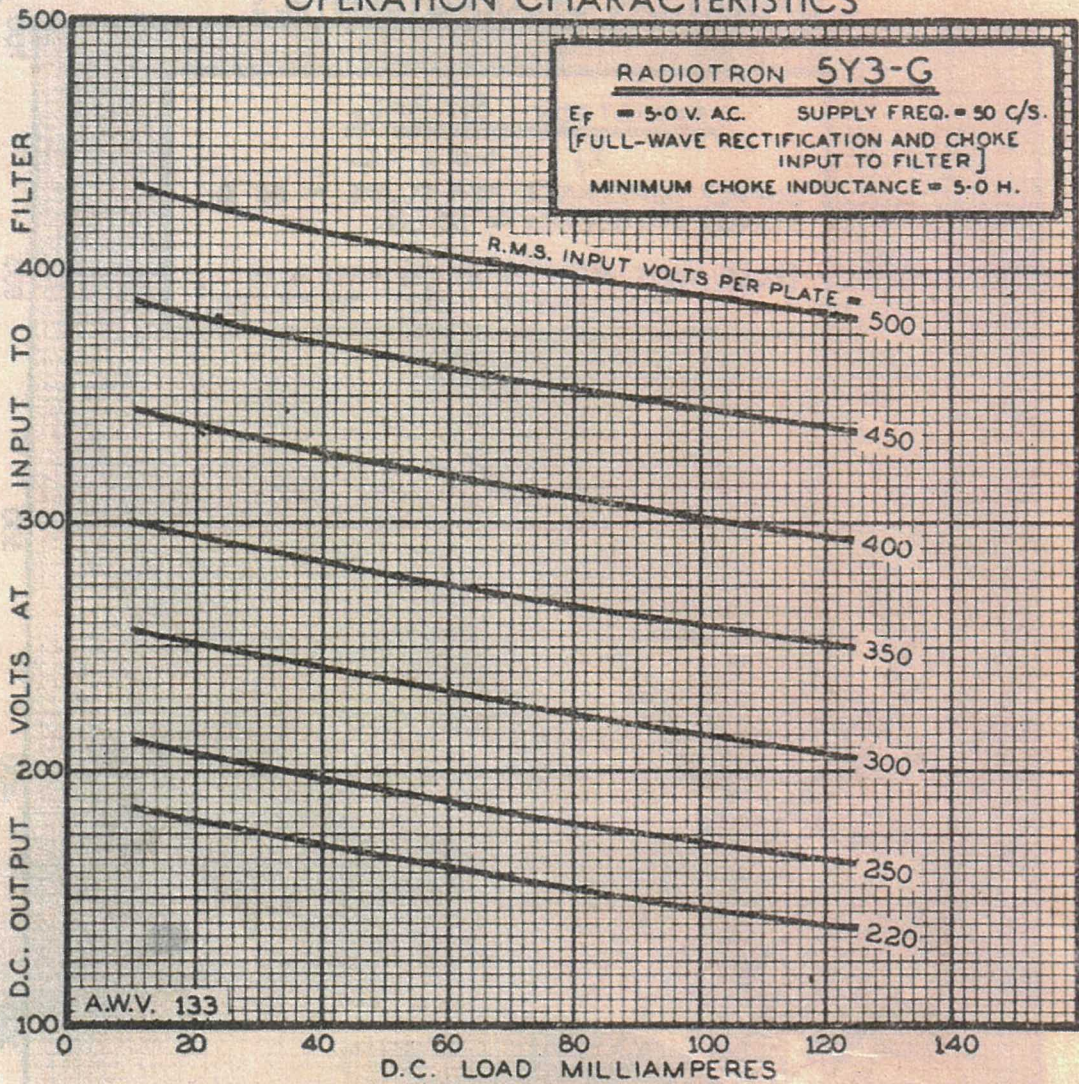


5Y3-G

# RADIOTRON

## 5Y3-G

### OPERATION CHARACTERISTICS



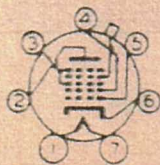
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
 SEPTEMBER, 1940 SYDNEY, AUSTRALIA

**RADIOTRON****6A7****PENTAGRID CONVERTER**

Types 2A7 &amp; 6A7 are similar electrically apart from heater rating.

6A7  
6A8  
6A8-G  
★

Heater <sup>■</sup>	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
Grid #4 to Plate	0.3 <sup>o</sup>	μuf
Grid #4 to Grid #2	0.15 <sup>o</sup>	μuf
Grid #4 to Grid #1	0.15 <sup>o</sup>	μuf
Grid #1 to Grid #2	1.0	μuf
Grid #4 to All Other Electrodes (R-F Input)	8.5	μuf
Grid #2 to All Other Electrodes (Osc. Output)	5.5	μuf
Grid #1 to All Other Electrodes (Osc. Input)	7.0	μuf
Plate to All Other Electrodes (Mixer Output)	9.0	μuf
Overall Length	4-9/32" to 4-17/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Small Metal	
Base	Small 7-Pin <sup>▲</sup>	
Pin 1 - Heater	Pin 5 - Grid #1	
Pin 2 - Plate	Pin 6 - Cathode	
Pin 3 - Grids #3 & #5	Pin 7 - Heater	
Pin 4 - Grid #2	Cap - Grid #4	
Mounting Position	BOTTOM VIEW (7C)	Any



Maximum Ratings, Typical Operating Conditions, and Curves are the same as for type 6A8.

- <sup>o</sup> With shield-can connected to cathode.  
<sup>■</sup> In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.  
<sup>▲</sup> Requires different socket than medium 7-pin base.

12/6 187-  
**6A8, 6A8-G****PENTAGRID CONVERTER**

★

Heater <sup>■</sup>	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp
Direct Interelectrode Cap.*	6A8	6A8-G
Grid #4 to Plate	0.07	0.26 μuf
Grid #4 to Grid #2	0.1	0.19 μuf
Grid #4 to Grid #1	0.09	0.16 μuf
Grid #1 to Grid #2	0.8	1.1 μuf
Grid #4 to All Other Electrodes (R-F Input)	12.5	9.5 μuf
Grid #2 to All Other Electrodes Except Grid #1 (Osc. Output)	5	4.6 μuf
Grid #1 to All Other Electrodes Except Grid #2 (Osc. Input)	6.5	6 μuf
Plate to All Other Electrodes (Mixer Output)	12.5	12 μuf
Overall Length	3-1/8" max.	{ 4-7/32" to 4-15/32"
Maximum Diameter	1-5/16"	1-9/16"
Cap	Miniature	Skirted Min.

- <sup>■</sup> In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.  
<sup>\*</sup> With shell of 6A8 connected to cathode, and with close-fitting shield on 6A8-G connected to cathode.

**AMALGAMATED WIRELESS VALVE CO. PTY. LTD.**

MAY, 1940

SYDNEY, AUSTRALIA

6A8  
6A8-G

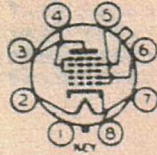
# RADIOTRON

12/16  
6A8, 6A8-G

## PENTAGRID CONVERTER

(continued from preceding page)

Base	6A8	6A8-G
		{ Small Wafer Octal 8-Pin
Basing Designation	8A	G-8A
Pin 1 { 6A8, Shell 6A8-G, No Con.		Pin 5 - Grid #1
Pin 2 - Heater		Pin 6 - Grid #2
Pin 3 - Plate		Pin 7 - Heater
Pin 4 - Grids #3 & #5		Pin 8 - Cathode
Mounting Position		Cap - Grid #4 Any



BOTTOM VIEW

### CONVERTER SERVICE

Plate Voltage	300 max. volts
Screen (Grids #3 & #5) Voltage	100 max. volts
Screen Supply Voltage	300 max. volts
Anode-Grid (Grid #2) Voltage	200 max. volts
Anode-Grid Supply Voltage**	300 max. volts
Control-Grid (Grid #4) Voltage	0 min. volts
Plate Dissipation	1.0 max. watt
Screen Dissipation	0.3 max. watt
Anode-Grid Dissipation	0.75 max. watt
Total Cathode Current	14 max. ma.

#### Typical Operation:

Plate Voltage	100	250	volts
Screen Voltage	50	100	volts
Anode-Grid Supply Voltage	100	250**	volts
Control-Grid Voltage	-1.5	-3	volts
Osc.-Grid (Grid #1) Resistor	50000	50000	ohms
Plate Resistance	0.6	0.36	ohms
Conversion Transconductance	360	550	μmhos
Conversion Transcond. (approx.)	3*	6**	μmhos
Plate Current	1.1	3.5	ma.
Screen Current	1.3	2.7	ma.
Anode-Grid Current	2	4	ma.
Oscillator-Grid Current	0.25	0.4	ma.
Total Cathode Current	4.6	10.6	ma.

\*\* Anode-grid supply voltages in excess of 200 volts require use of 20000-ohm voltage-dropping resistor by-passed by 0.1 μf condenser.  
\* With control-grid bias of -20 volts.  
\*\* With control-grid bias of -35 volts.

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

MAY, 1940

SYDNEY, AUSTRALIA

**RADIOTRON****6B6-G****6B6-G**  
SHEET 1**DUPLEX-DIODE HIGH-MU TRIODE**

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances: <sup>Ⓞ</sup>		
Grid to Plate	1.3	μF
Grid to Cathode	2.7	μF
Plate to Cathode	4.5	μF
Maximum Overall Length	4-15/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Skirted Miniature	
Mounting Position	Any	

Base		Small Shell Octal 7-Pin
Pin 1-No Connection		Pin 5-Diode Plate #1
Pin 2-Heater		Pin 7-Heater
Pin 3-Triode Plate		Pin 8-Cathode
Pin 4-Diode Plate #2		Cap -Grid

**BOTTOM VIEW****DIODE UNITS - Two**

For average diode characteristics see under 6B7, 6B7S.

Consideration of these units is given under type 85. The triode unit of type 6B6-G is not suitable for diode-biasing but must be used with cathode or grid-leak biasing as set out elsewhere on this data sheet. Alternatively the required bias voltage may be derived from a bias battery or other external source.

**TRIODE UNIT - Class A Amplifier<sup>Δ</sup>****Operating Conditions and Characteristics:**

Heater*	6.3	volts
Plate Voltage	250	volts
Grid Voltage	-2.0	volts
Amplification Factor	100	
Plate Resistance	91000	ohms
Transconductance	1100	umhos
Plate Current	0.9	mA.

**TRIODE UNIT**

(As Res.-Coupled Amplifier with Cathode Bias\*\*)

Heater*	6.3	6.3	6.3	6.3	volts
Plate Supply	180	180	300	300	volts
Plate Load Res.	0.1	0.1	0.1	0.1	meg.
Grid Res. of Following Valve	.25	0.5	.25	0.5	meg.
Cath. Bias Res.	2900	3000	2200	2300	ohms
Peak Output <sup>▽</sup>	22	23	41	45	volts
Voltage Gain	36	37	39	42	times

<sup>Ⓞ</sup> With a close-fitting shield connected to cathode.

\* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

<sup>Δ</sup> The triode unit of type 6B6-G, having a high plate-resistance is not suitable for use as a transformer-coupled amplifier.

For other footnotes see back of sheet.

6B6-G

# RADIOTRON

## 6B6-G

### DUPLEX-DIODE HIGH-MU TRIODE

#### TRIODE UNIT

(As Res.-Coupled Amplifier with Cathode Bias<sup>\*\*</sup>)

Heater	6.3	6.3	6.3	6.3	volts
Plate Supply	180	180	300	300	volts
Plate Load Res.	.25	.25	.25	.25	meg.
Grid Res. of Following Valve	0.5	1.0	0.5	1.0	meg.
Cath. Bias Res.	4800	5300	3900	4200	ohms
Peak Output <sup>o</sup>	28	33	51	60	volts
Voltage Gain	50	53	53	56	times

#### TRIODE UNIT

(As Res.-Coupled Amplifier with Grid-Leak Bias<sup>o</sup>)

Heater	6.3	6.3	volts
Plate Supply	250	250	volts
Plate Load Res.	.25	.25	meg.
Grid Resistor	5.0	10	meg.
Grid Resistor of Following Valve	1.0	1.0	meg.
Peak Output	41.5	43.8	volts
Distortion (max.output)	5.5	4.8	percent.
Voltage Gain	49	51.6	times

\*\*The value specified for the cathode-bias resistor is the exact value but in most cases the nearest standard value may be used satisfactorily. The figures of gain are on the assumption that the bias resistor is adequately bypassed.

<sup>o</sup> At the grid current point.

• The grid resistor of stated value is returned directly to the cathode.

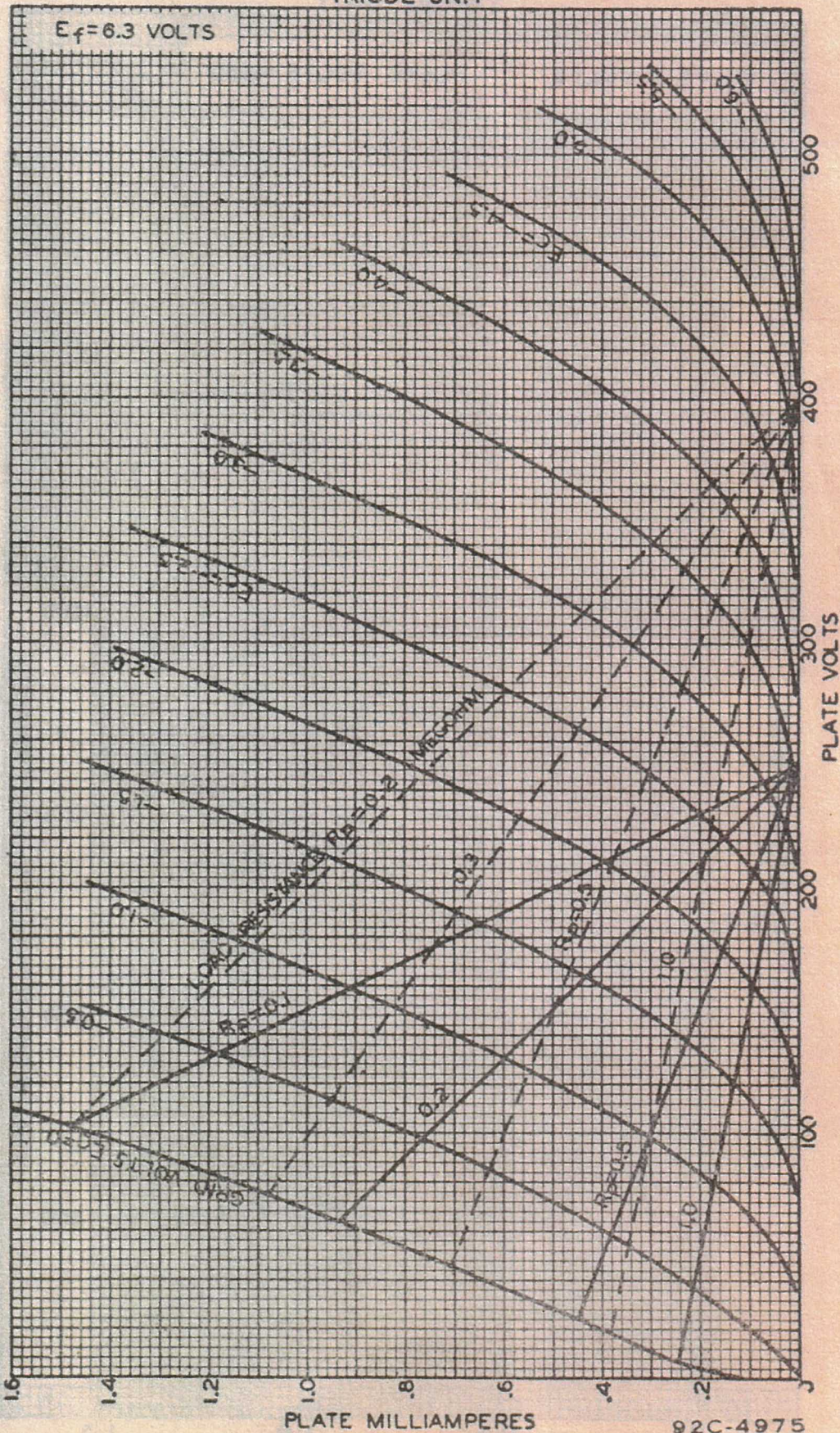
Note: The grid-circuit resistance for type 6B6-G may be as high as 10 megohms provided that the circuit constants are such that the plate current cannot exceed 1.0 mA.

# RADIOTRON

## 6B6-G

### AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

6B6-G  
SHEET 2



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JULY, 1941

SYDNEY, AUSTRALIA

6B6-G

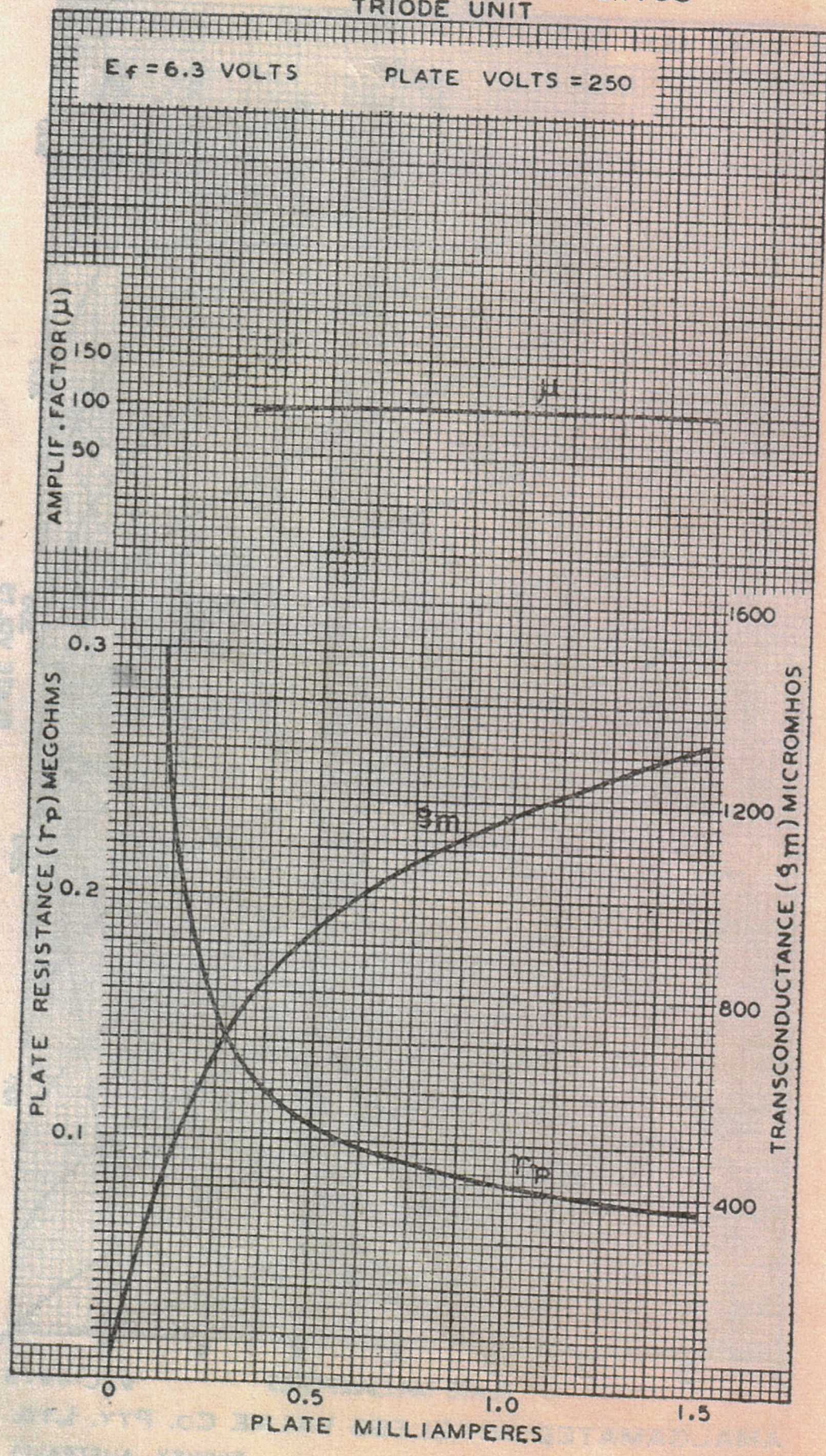
# RADIOTRON

6B6-G

## AVERAGE CHARACTERISTICS TRIODE UNIT

$E_f = 6.3$  VOLTS

PLATE VOLTS = 250



# RADIOTRON

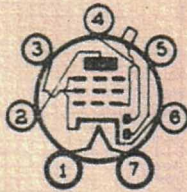
6B7

## DUO-DIODE PENTODE

6B7  
6B7S



Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances - Pentode Unit.		
Grid to Plate (with shield can)	0.007	$\mu$ F.
Input	3.5	$\mu$ F.
Output	9.5	$\mu$ F.
Overall Length	4-9/32" to 4-17/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Small Metal	
Mounting Position	Any	
Base	Small 7 Pin	
Pin 1 - Heater	Pin 5 - Diode Plate	
Pin 2 - Plate	Pin 6 - Cathode	
Pin 3 - Screen	Pin 7 - Heater	
Pin 4 - Diode Plate	Cap - Grid	



BOTTOM VIEW

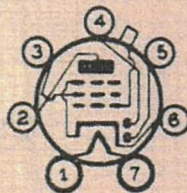
Maximum Ratings and Typical Operating Conditions are the same as for type 6B8-G. Curves under type 6B8-G also apply to type 6B7.

# RADIOTRON

6B7S

## DUO-DIODE SUPER-CONTROL PENTODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances - Pentode Unit		
Grid to Plate (with shield can)	0.007	$\mu$ F.
Input	3.5	$\mu$ F.
Output	9.5	$\mu$ F.
Overall Length	4-9/32" to 4-17/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Small Metal	
Mounting Position	Any	
Base	Small 7 Pin	
Pin 1 - Heater	Pin 5 - Diode Plate	
Pin 2 - Plate	Pin 6 - Cathode	
Pin 3 - Screen	Pin 7 - Heater	
Pin 4 - Diode Plate	Cap - Grid	



BOTTOM VIEW

Maximum Ratings and Typical Operating Conditions are the same as for type 6G8-G. Curves under type 6G8-G also apply to type 6B7S.

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SEPTEMBER, 1940

SYDNEY, AUSTRALIA

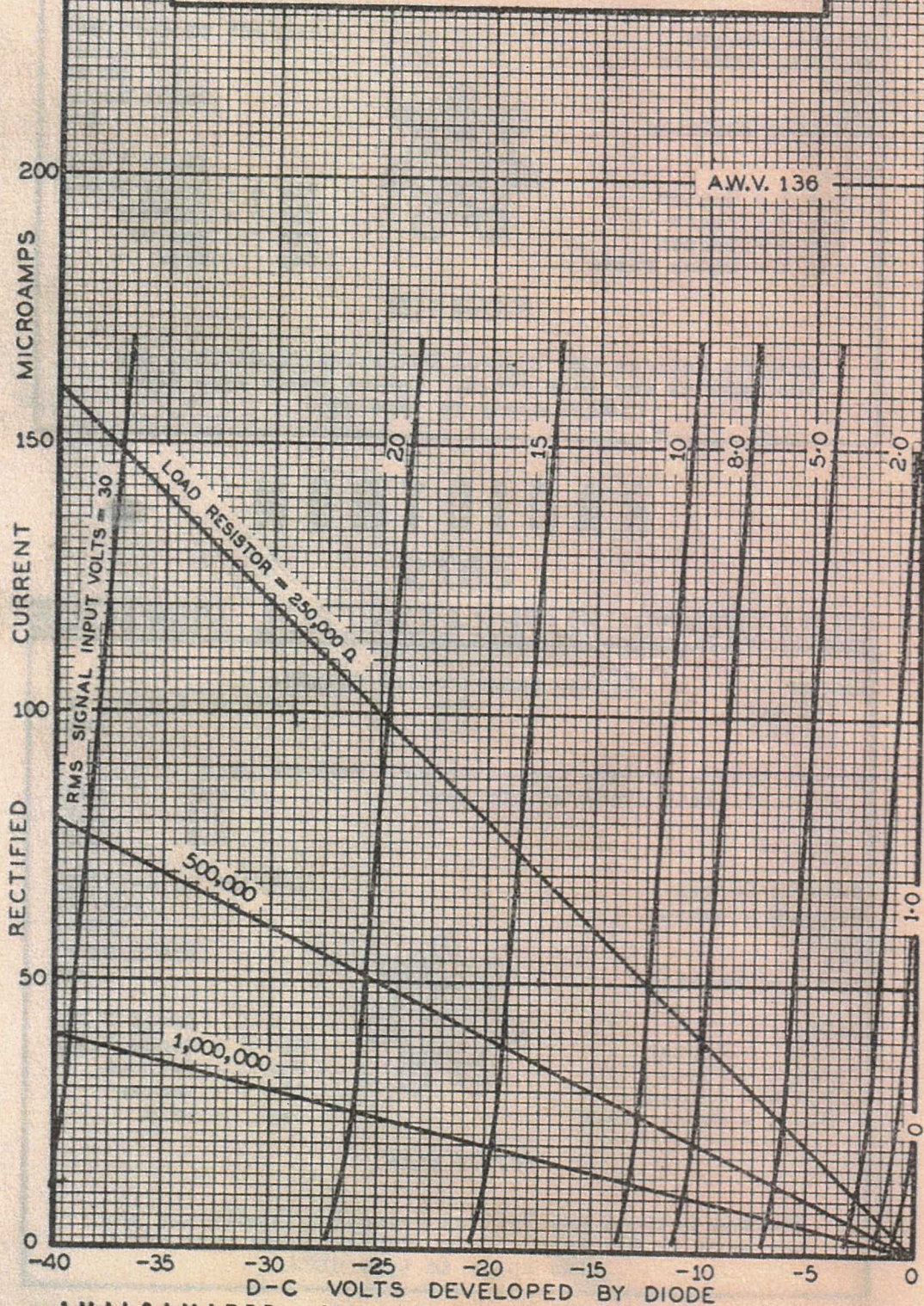
# RADIOTRON

## AVERAGE DIODE CHARACTERISTICS

(For all Indirectly-Heated Duo-Diode-Amplifier Valves)

### HALF-WAVE RECTIFICATION - SINGLE DIODE UNIT.

These curves apply to all Duplex-Diode-Amplifier valves such as types 2A6, 2B7, 6B6-G, 6B7, 6B7S, 6B8, 6B8-G, 6Q7, 6Q7-G, 6Q7-GT, 6R7, 6R7-G, 6SQ7, 6T7-G, 55, 75, 85 etc.



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SEPTEMBER, 1940  
SYDNEY, AUSTRALIA

## RADIOTRON

6B8-G

## DUPLIX-DIODE PENTODE

6B8-G

Types 2B7, 6B7 &amp; 6B8-G are similar electrically apart from heater ratings.

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances - Pentode Unit:°		
Grid to Plate	0.01 max.	μf
Input	3.6	μf
Output	9.5	μf
Overall Length	4-7/32" to 4-15/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Skirted Miniature	
Base	Small Shell Octal 8-Pin	
Pin 1 - No Connection		Pin 6 - Screen
Pin 2 - Heater		Pin 7 - Heater
Pin 3 - Plate		Pin 8 - Cathode
Pin 4 - Diode Plate #2		Cap - Grid
Pin 5 - Diode Plate #1		
Mounting Position	BOTTOM VIEW (G-8E)	Any

PENTODE UNIT - Class A<sub>1</sub> Amplifier

Plate Voltage	300 max. volts				
Screen Voltage	125 max. volts				
Screen Supply Voltage	300 max. volts				
Grid Voltage	0 min. volts				
Plate Dissipation	2.25 max. watts				
Screen Dissipation	0.3 max. watt				
Typical Operation:					
Plate	100	180	250	250	volts
Screen	100	75	100	125	volts
Grid*	-3	-3	-3	-3	volts
Plate Res. (approx.)	0.3	1.0	0.8	0.6	megohm
Transcond.	950	840	1000	1125	μmhos
Grid Bias (approx.)**	-17	-13	-17	-21	volts
Plate Cur.	5.8	3.4	6	9	ma.
Screen Cur.	1.7	0.9	1.5	2.3	ma.

DIODE UNITS - Two

The two diode units are placed around a cathode, the sleeve of which is common to the pentode unit. Their rectifying or detecting action may be used in half-wave or full-wave arrangement to supply signal voltage to the pentode unit and/or voltage to regulate the gain of the r-f or i-f amplifier stages so as to maintain essentially constant-carrier input to the audio detector. The half-wave circuit will provide approximately twice the rectified voltage obtainable from the full-wave circuit. Regulation of amplifier gain by means of a rectified voltage may be accomplished by a number of methods. The regulating voltage may be applied to the control grids of the amplifier valves or it may be applied in the case of the r-f pentodes to their suppressors, plates and/or screens. The complex structure of the 6B8-G permits of obtaining a-c voltage in a number of ways.

° In circuits where the cathode is not connected directly to the heater, the potential difference between heater and cathode should be kept as low as possible.

\* For cathode-current cut-off, with close-fitting shield connected to cathode.

\*\* The d-c resistance in the grid circuit should not exceed 1.0 megohm.

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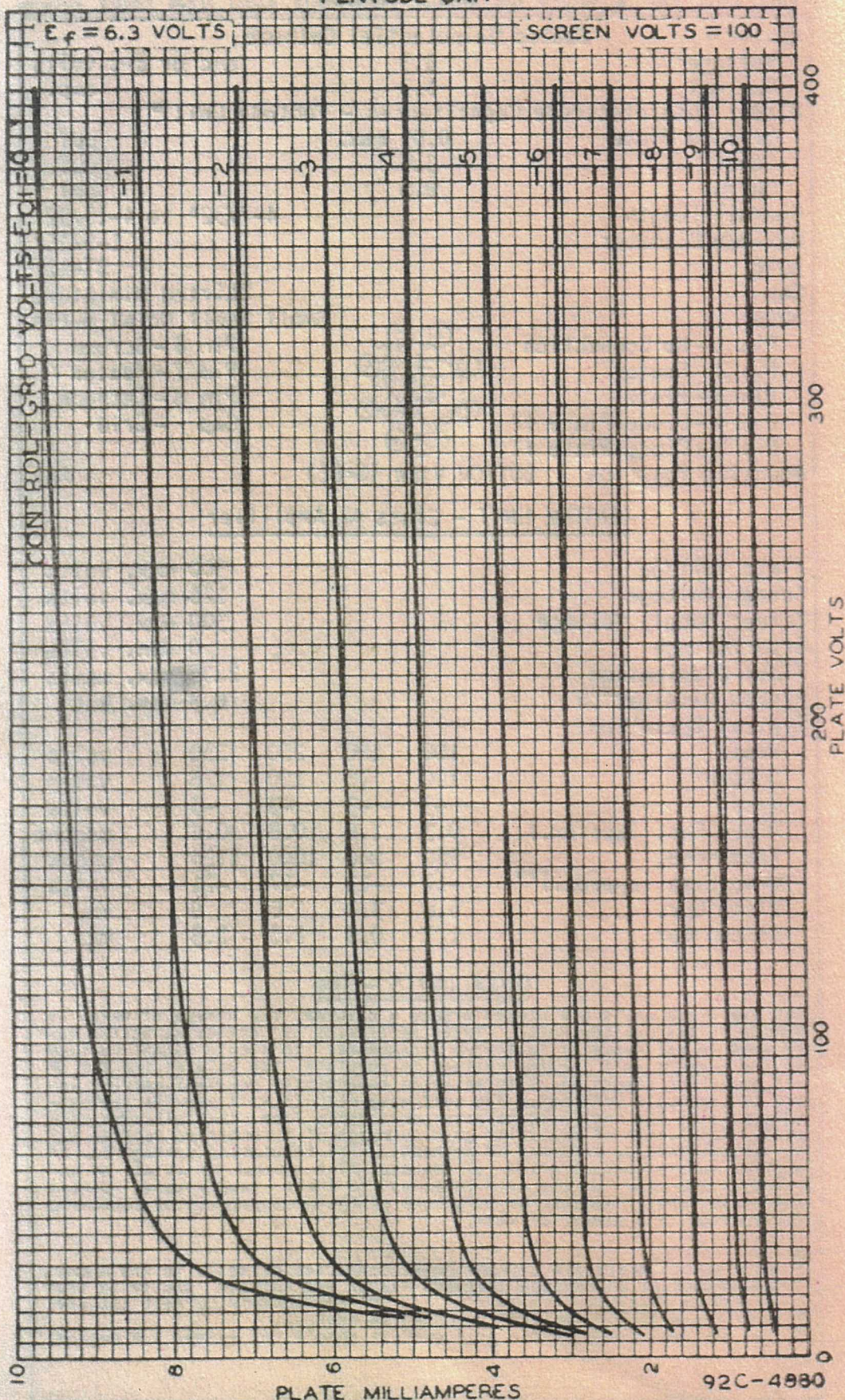
MAY, 1940

SYDNEY, AUSTRALIA

6B8-G

# RADIOTRON

6B8-G  
AVERAGE PLATE CHARACTERISTICS  
PENTODE UNIT



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MAY 1940

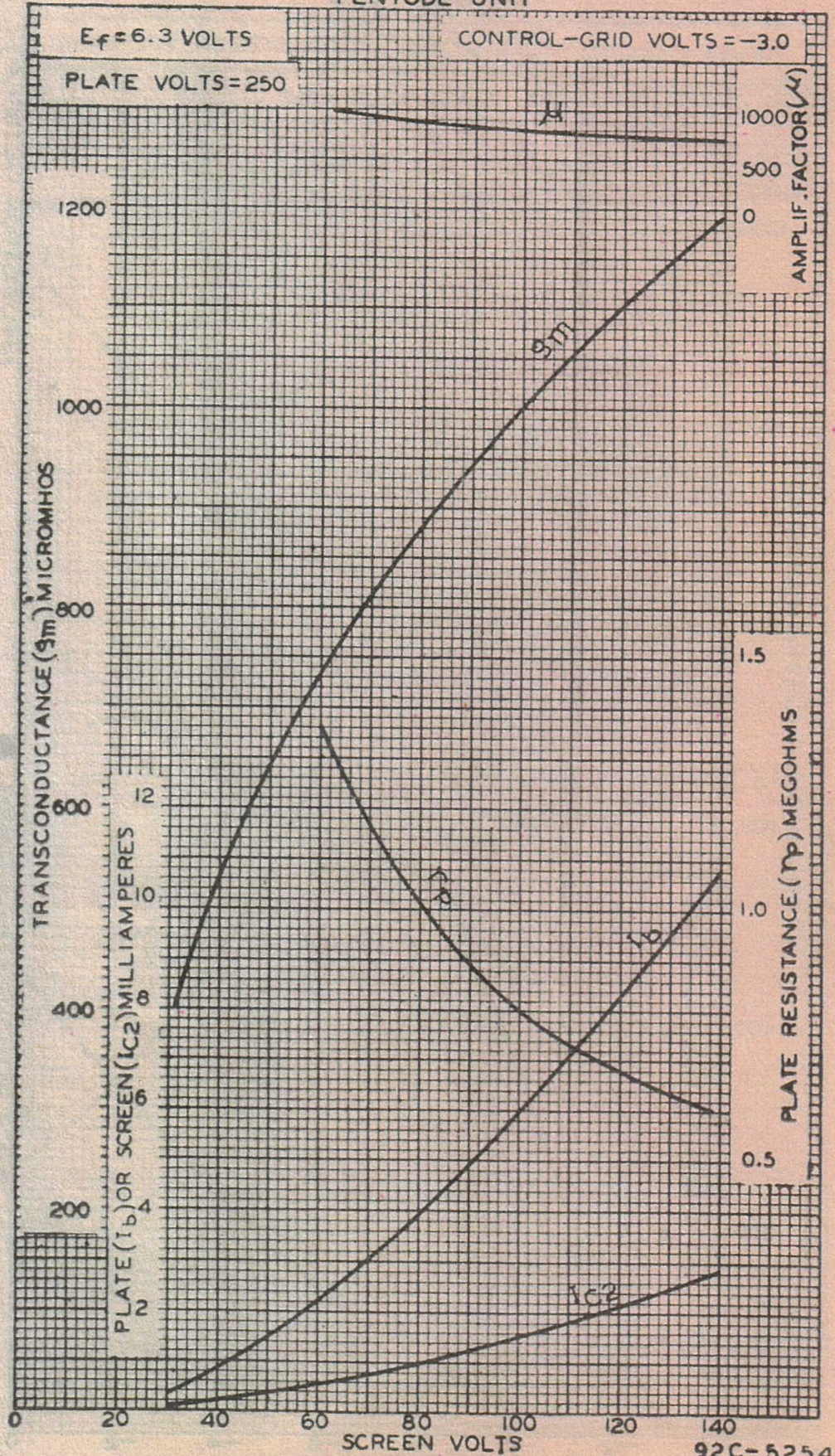
92C-4880  
SYDNEY, AUSTRALIA

# RADIOTRON

6B8-G

AVERAGE CHARACTERISTICS  
PENTODE UNIT

6B8-G  
SHEET 2



92C-5254

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

MAY, 1940

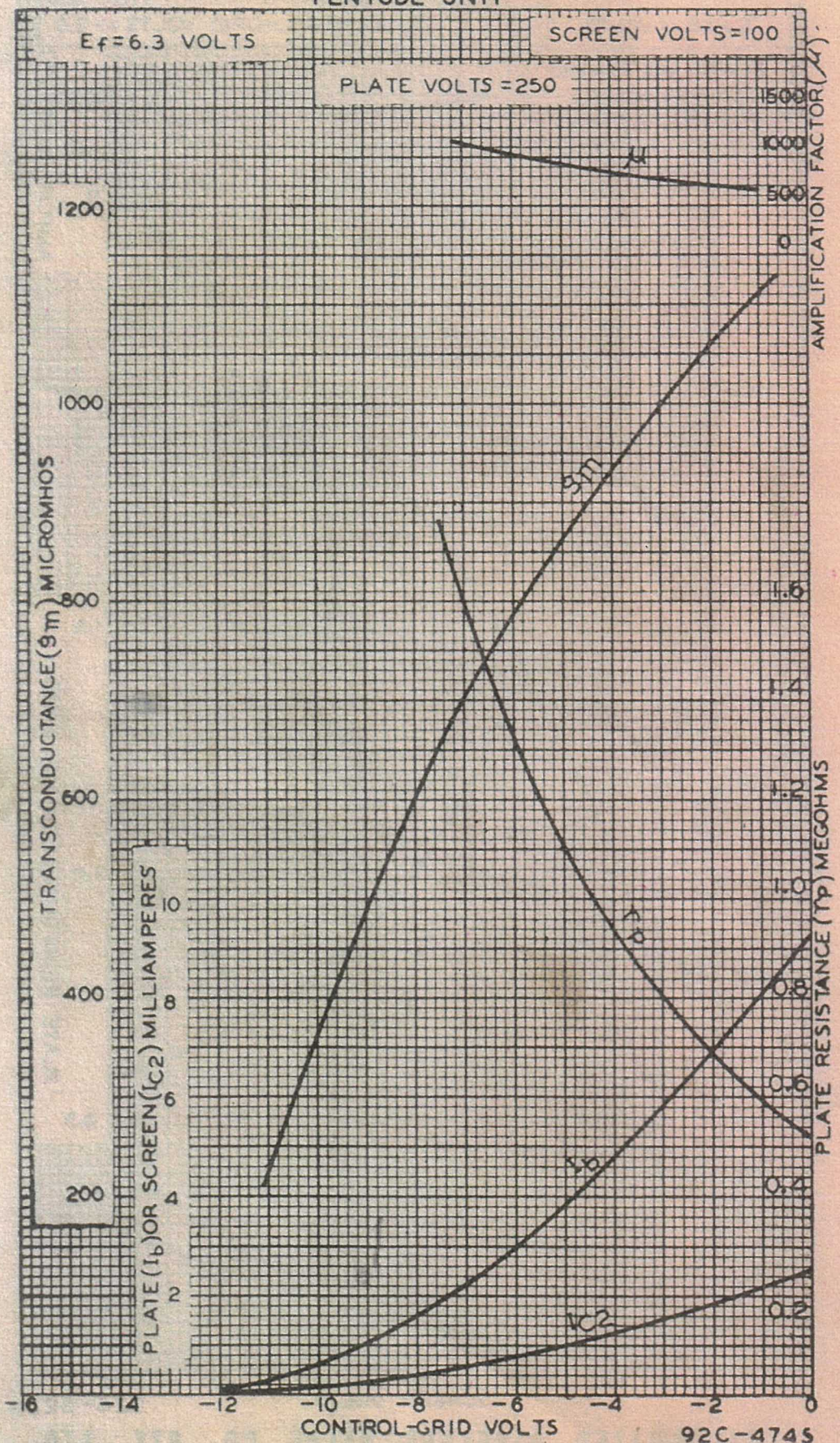
SYDNEY, AUSTRALIA

6B8-G

# RADIOTRON

6B8-G

## AVERAGE CHARACTERISTICS PENTODE UNIT



92C-4745

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MAY, 1940

SYDNEY, AUSTRALIA

# RADIOTRON

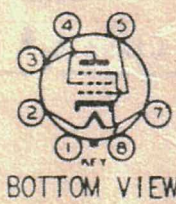
6F6, 6F6-G

## POWER AMPLIFIER PENTODE



Types 6F6, 6F6-G, 42 & 2A5 are similar electrically apart from the heater rating.

Heater <sup>■</sup>	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.7	amp.
	6F6	6F6-G
Maximum Overall Length	3-1/4"	4-5/8"
Maximum Diameter	1-5/16"	1-13/16"
Bulb	Metal Shell, MT-8	
Base	Small Wafer Octal 7-Pin	Medium Shell Octal 7-Pin
Basing Designation	7S	G-7S
Pin 1	6F6, Shell 6F6-G, No Con.	Pin 4 - Screen
Pin 2 - Heater		Pin 5 - Grid
Pin 3 - Plate		Pin 7 - Heater
Mounting Position		Pin 8 - Cathode
		Any



### SINGLE-VALVE AMPLIFIER - Class A<sub>1</sub><sup>\*</sup> (Pentode Connection)

Plate Voltage	375 max. volts
Screen Voltage	285 max. volts
Plate Dissipation	11 max. watts
Screen Dissipation	3.75 max. watts

	Fixed Bias		Cathode Bias		
Plate	250	285	250	285	volts
Screen	250	285	250	285	volts
Grid*	-16.5	-20	-	-	volts
Cathode Resistor	-	-	410	440	ohms
Peak A-F Grid Volt.	16.5	20	16.5	20	volts
Zero-Sig. Plate Cur.	34	38	34	38	ma.
Max.-Sig. Plate Cur.	36	40	35	38	ma.
Zero-Sig. Screen Cur.	6.5	7	6.5	7	ma.
Max.-Sig. Screen Cur.	10.5	13	9.7	12	ma.
Plate Res. (approx.)	80000	78000	-	-	ohms
Transconductance	2500	2550	-	-	μmhos
Load Resistance	7000	7000	7000	7000	ohms
Tot. Harmonic Dist.	8	9	8.5	9	%
Max.-Sig. Power Output	3.2	4.8	3.1	4.5	watts

### SINGLE-VALVE AMPLIFIER - Class A<sub>1</sub><sup>\*</sup> (Triode Connection) †

Plate Voltage	350 max. volts
Plate & Screen Dissipation (Total)	10 max. watts

	Fixed Bias		Cathode Bias		
Plate	250		250		volts
Grid*	-20		-		volts
Cathode Resistor	-		650		ohms
Peak A-F Grid Voltage	20		20		volts

<sup>■</sup> In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.  
<sup>†</sup> Screen tied to plate.  
<sup>\*</sup>, <sup>‡</sup>: See next page.

6F6  
6F6-G

# RADIOTRON

6F6, 6F6-G

## POWER AMPLIFIER PENTODE

(continued from preceding page)

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Zero-Sig. Plate Cur.	31	31	ma.
Max.-Sig. Plate Cur.	34	32	ma.
Plate Resistance	2600	-	ohms
Amp. Factor	6.8	-	
Transconductance	2600	-	μmhos
Load Resistance	4000	4000 <sup>†</sup>	ohms
Total Harmonic Dist.	6.5	6.5	%
Max.-Sig. Power Output	0.85	0.8	watt

### PUSH-PULL AMPLIFIER - Class A<sub>1</sub><sup>‡</sup> (Pentode Connection)

Plate Voltage	375 max. volts
Screen Voltage	285 max. volts
Plate Dissipation	11 max. watts
Screen Dissipation	3.75 max. watts

Typical Operation:

Values are for 2 valves.

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	315	315	volts
Screen	285	285	volts
Grid*	-24	-	volts
Cathode Resistor	-	320	ohms
Peak A-F Grid-to-Grid Voltage	48	58	volts
Zero-Sig. Plate Cur.	62	62	ma.
Max.-Sig. Plate Cur.	80	73	ma.
Zero-Sig. Screen Cur.	12	12	ma.
Max.-Sig. Screen Cur.	19.5	18	ma.
Effective Load Resistance (plate to plate)	10000	10000	ohms
Total Harmonic Dist.	4	3	%
Max.-Sig. Power Output	11	10.5	watts

### PUSH-PULL AMPLIFIER - Class AB<sub>2</sub><sup>‡</sup> (Pentode Connection)

Plate Voltage	375 max. volts
Screen Voltage	285 max. volts
Plate Dissipation	11 max. watts
Screen Dissipation	3.75 max. watts

Typical Operation:

Values are for 2 valves.

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	375	375	volts
Screen	250	250	volts
Grid*	-26	-	volts
Cathode Resistor <sup>Δ</sup>	-	340	ohms

<sup>‡</sup> Subscript 1 indicates that grid current does not flow during any part of input cycle.

<sup>‡</sup> Subscript 2 indicates that grid current flows during some part of input cycle.

<sup>Δ</sup> The value given for the cathode resistor is determined for a grid bias of -21 volts.

\* See next page.

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SYDNEY, AUSTRALIA

# RADIOTRON

6F6, 6F6-G

6F6-G  
SHEET 2

## POWER AMPLIFIER PENTODE

(continued from preceding page)

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Peak A-F Grid-to-Grid Voltage	82	94	volts
Zero-Sig. Plate Cur.	34	54	ma.
Max.-Sig. Plate Cur.	82	77	ma.
Zero-Sig. Screen Cur.	5	8	ma.
Max.-Sig. Screen Cur.	19.5	18	ma.
Effective Load Resistance (plate to plate)	10000	10000	ohms
Total Harmonic Dist.	3.5	5	%
Max.-Sig. Power Output	18.5	19	watts

### PUSH-PULL AMPLIFIER - Class AB<sub>2</sub>\* (Triode Connection)†

Plate Voltage	350 max. volts
Plate & Screen Dissipation (Total)	10 max. watts

Typical Operation: Values are for 2 valves.

	<u>Fixed Bias</u>	<u>Cathode Bias</u>	
Plate	350	350	volts
Grid*	-38	-	volts
Cathode Resistor #	-	730	ohms
Peak A-F Grid-to-Grid Voltage	123	132	volts
Zero-Sig. Plate Cur.	48	50	ma.
Max.-Sig. Plate Cur.	92	61	ma.
Effective Load Resistance (plate to plate)	6000	10000	ohms
Total Harmonic Dist.	2	3	%
Max.-Sig. Power Output	13	9	watts

\* Subscript 2 indicates that grid current flows during some part of input cycle.

† Screen connected to plate.

\* Type of input coupling used should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance as high as, but not greater than 0.5 megohm provided the heater voltage is not allowed to rise more than 10% above rated value under any condition of operation.

# The value given for the cathode resistor is determined for a grid bias of -36.5 volts.

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APRIL, 1940

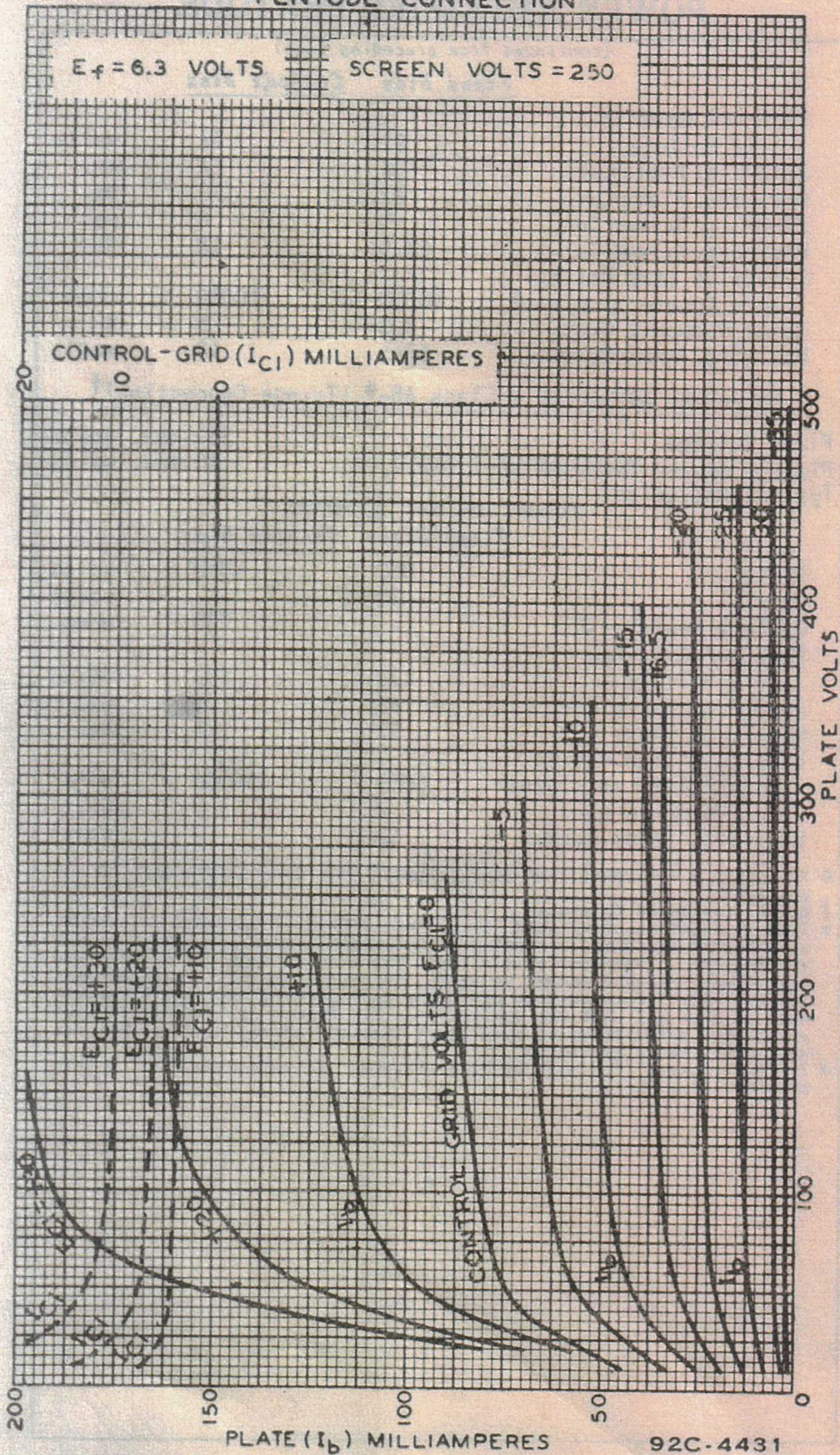
SYDNEY, AUSTRALIA

6F6  
6F6-G

# RADIOTRON

6F6

## AVERAGE PLATE CHARACTERISTICS PENTODE CONNECTION



92C-4431

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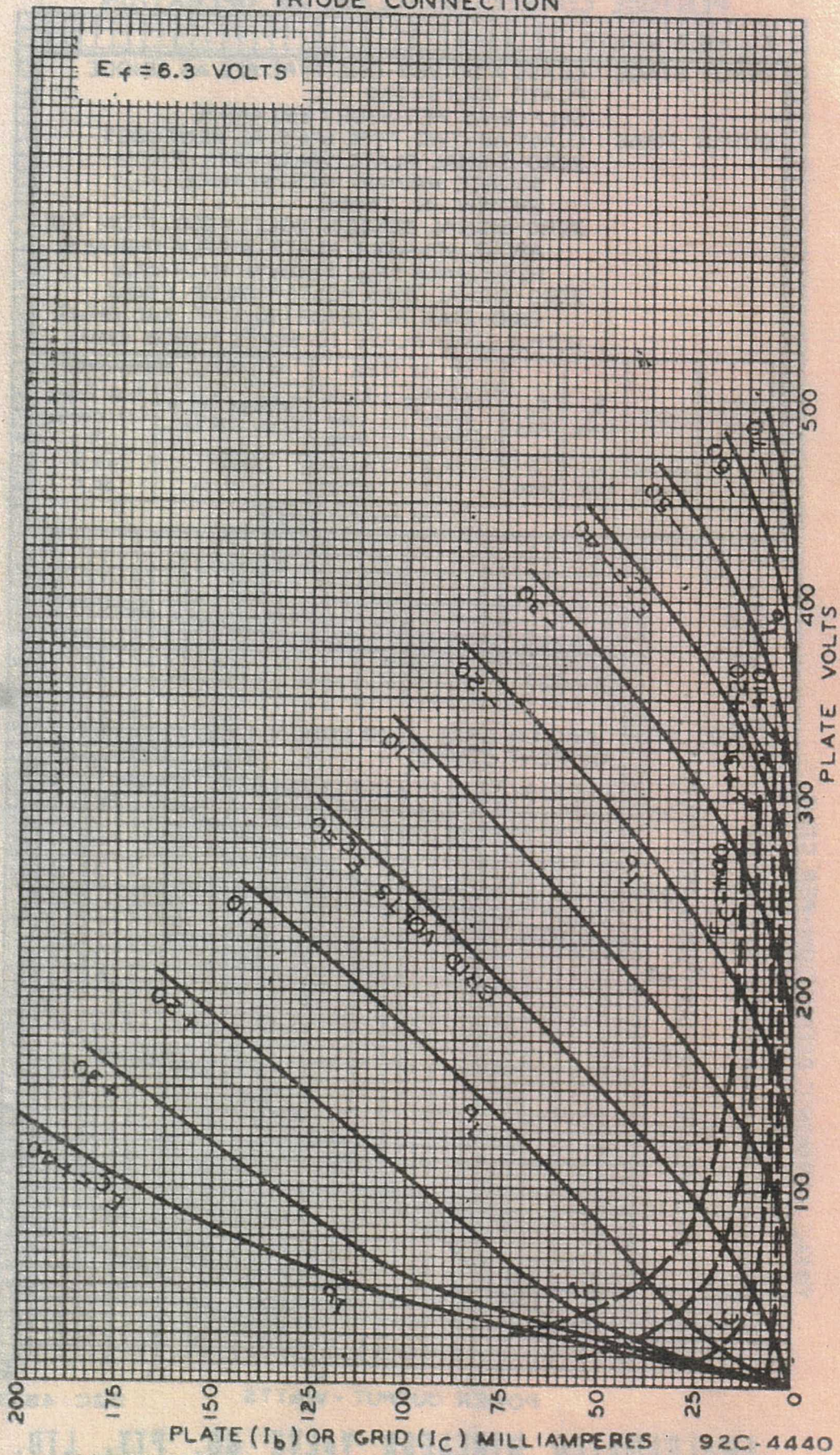
SYDNEY, AUSTRALIA

# RADIOTRON

6F6, 6F6-G

AVERAGE PLATE CHARACTERISTICS  
TRIODE CONNECTION

6F6  
6F6-G  
SHEET 3



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

APRIL, 1940

SYDNEY, AUSTRALIA

6F6  
6F6-G

# RADIOTRON

6F6, 6F6-G

## OPERATION CHARACTERISTICS PENTODE CONNECTION-CLASS AB OPERATION

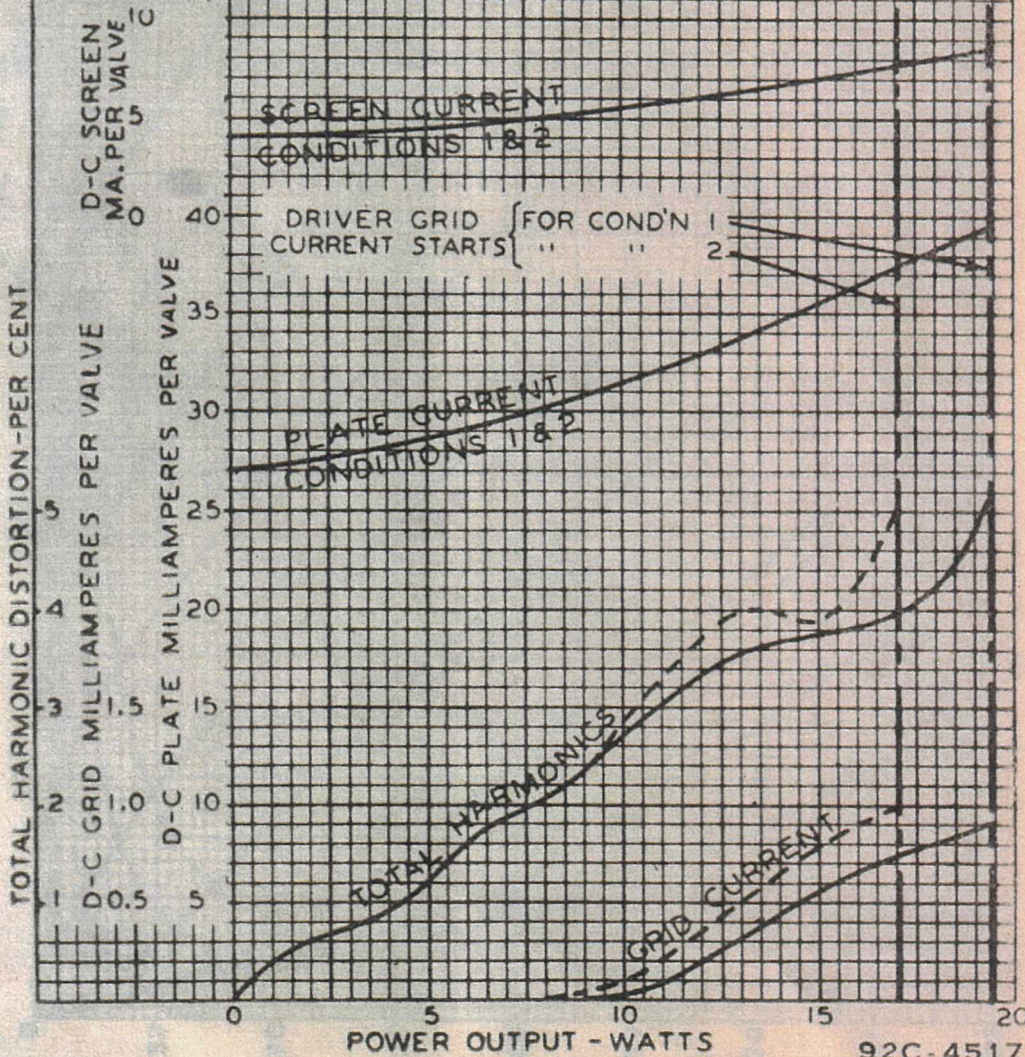
$E_f = 6.3$  VOLTS

INPUT STAGE : CLASS A DRIVER-ONE TYPE 6F6 AS TRIODE  
 PLATE VOLTS = 250  
 SELF-BIAS RESISTOR = 650 OHMS

OUTPUT STAGE : CLASS AB-TWO TYPE 6F6'S AS PENTODES  
 ZERO-SIGNAL PLATE VOLTS = 375, FROM  
 SOURCE HAVING RESISTANCE ( $R_b$ )  
 SHOWN IN TABLE  
 ZERO-SIGNAL SCREEN VOLTS = 250, FROM THE  
 ABOVE 375-VOLT PLATE SUPPLY THROUGH  
 RESISTANCE ( $R_d$ ) SHOWN IN TABLE  
 ZERO-SIGNAL BIAS VOLTS = VALUE FROM  
 GRID-BIAS RESISTOR ( $R_c$ ) OF 340 OHMS  
 OUTPUT LOAD, PLATE TO PLATE = 10000 OHMS

CONDIT- TION	CURVE	$R_b$ Ohms	$R_d$ Ohms	DRIVER STAGE		INTERSTAGE TRANSFORMER	
				Input-Sig. Volts* (RMS)	Plate Load Ohms	Voltage Ratio Prim.:1/2Sec.	Peak Power Efficiency %
1	—	0	0	14.6	51100	2.50:1	47.7
2	- - -	1000	2000	10.3	33100	1.74:1	64.4

\* For maximum output



92C-4517

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# RADIOTRON

6H6, 6H6-G

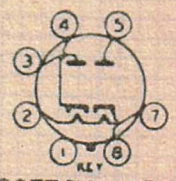
TWIN DIODE

6H6  
6H6-G



91-8/6

	Coated Unipotential Cathodes		a-c or d-c volts amp.
	6H6	6H6-G	
Heater Voltage	6.3		
Heater Current	0.3		
Direct Interelectrode Cap.			
Plate #1 to Cathode #1	3.0 <sup>o</sup>	3.1 <sup>o</sup>	μf
Plate #2 to Cathode #2	3.4 <sup>o</sup>	4.0 <sup>o</sup>	μf
Plate #1 to Plate #2	0.05 max. <sup>o</sup>	0.1 max. <sup>o</sup>	μf
Maximum Overall Length	1-3/4"	4-1/8"	
Maximum Diameter	1-5/16"	1-9/16"	
Bulb	Metal Shell, MT-8	ST-12	
Base	{ Small Wafer { Octal 7-Pin	{ Small Shell { Octal 7-Pin	
Basing Designation	7Q	G-7Q	
Pin 1	{ 6H6, Shell { 6H6-G, Internal Shield	Pin 4 - Cathode #2	
Pin 2 - Heater		Pin 5 - Plate #1	
Pin 3 - Plate #2		Pin 7 - Heater	
Mounting Position		Pin 8 - Cathode #1	



BOTTOM VIEW  
RECTIFIER

A-C Plate Voltage per Plate (RMS) 117 max. volts  
D-C Output Current 4 max. ma.

The two separate diodes offer flexibility in the design of circuits using the 6H6 or 6H6-G for a detector, a low-voltage low current rectifier, or for the purpose of *avc*. For *detection*, the diodes may be utilized in a full-wave circuit or in a half-wave circuit. In the latter case, one plate only or the two plates in parallel, may be employed. The use of the half-wave arrangement will provide approximately twice the rectified voltage as compared with the full-wave arrangement. For *avc*, the 6H6 or 6H6-G may be used in circuits similar to those employed for any of the duplex-diode types of tubes. The only difference is that the 6H6 and 6H6-G are more adaptable because each diode has its own separate cathode.

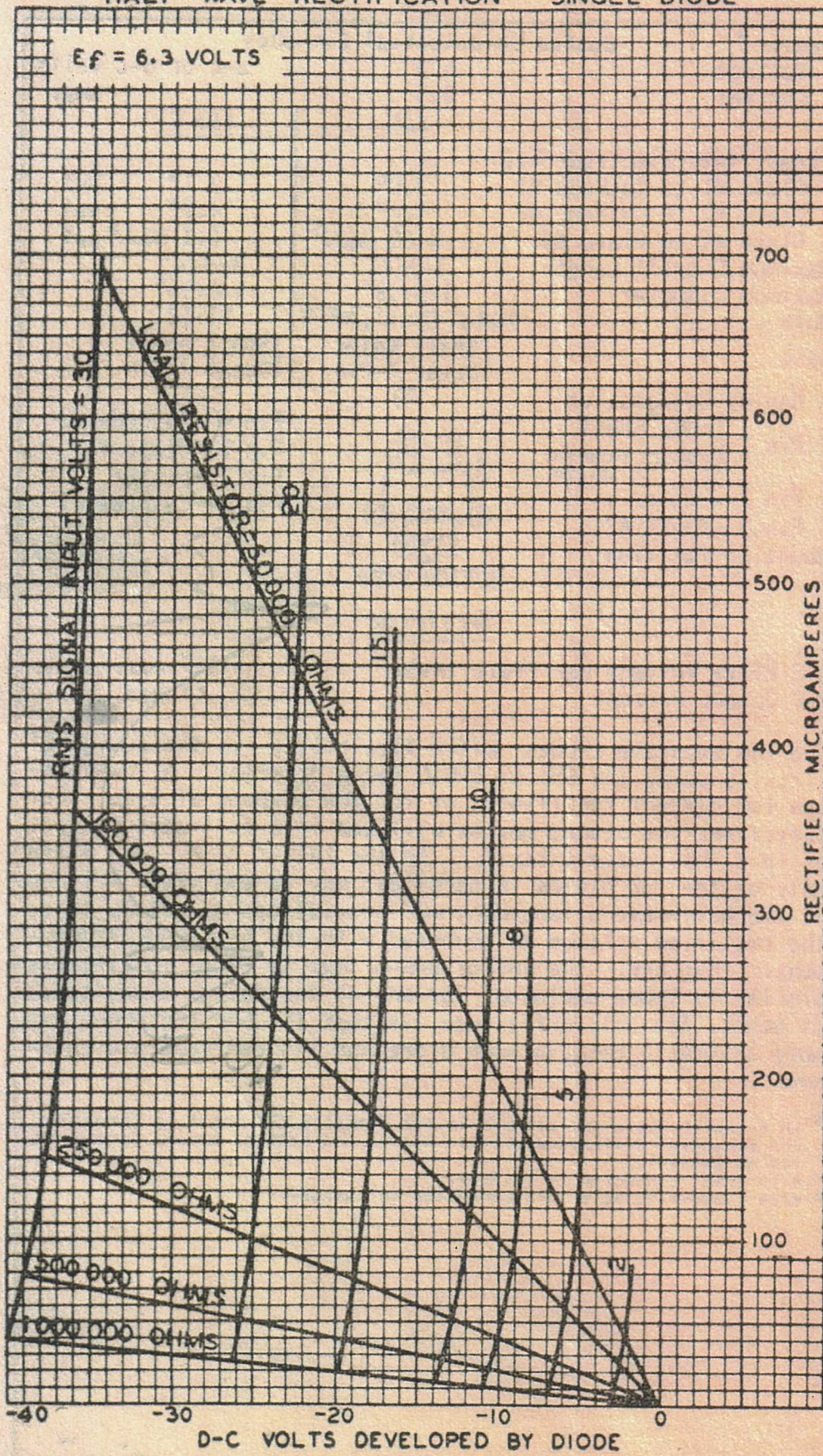
- o In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- o with shell connected to cathode.
- o with close-fitting shield connected to cathode.

6H6

# RADIOTRON

6H6

AVERAGE CHARACTERISTICS  
HALF-WAVE RECTIFICATION - SINGLE DIODE



92C-4446

6J7  
6J7-G

# RADIOTRON

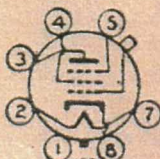
6J7, 6J7-G

## TRIPLE-GRID DETECTOR AMPLIFIER



Types 57, 606, 6J7 & 6J7-G are similar electrically apart from heater rating.

Heater		Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
Direct Interelectrode Capacitances:			
Pentode Connection:		6J7*	6J7-G
Grid to Plate	0.005 max.	0.007 max. <sup>o</sup>	$\mu\mu\text{f}$
Input	7	4.6 <sup>o</sup>	$\mu\mu\text{f}$
Output	12	12 <sup>o</sup>	$\mu\mu\text{f}$
Triode Connection:			
Grid to Plate	2	1.8 <sup>o</sup>	$\mu\mu\text{f}$
Grid to Cathode	5	2.6 <sup>o</sup>	$\mu\mu\text{f}$
Plate to Cathode	14	17 <sup>o</sup>	$\mu\mu\text{f}$
Overall Length	3-1/8" max.	4-7/32" to 4-15/32"	
Maximum Diameter	1-5/16"	1-9/16"	
Bulb	Metal Shell, MT-8	ST-12	
Cap	Miniature	Skirted Miniature	
Base	{ Small Wafer Octal 7-Pin	{ Small Shell Octal 7-Pin	
Basing Designation	7R	6-7R	
Pin 1	{ 6J7, Shell 6J7-G, Internal Shield	Pin 5 - Suppressor	
Pin 2	Heater	Pin 7 - Heater	
Pin 3	Plate	Pin 8 - Cathode	
Pin 4	Screen	Cap - Grid	
Mounting Position	BOTTOM VIEW		Any



### AMPLIFIER - Class A<sub>1</sub> (Pentode Connection)

Plate Voltage	300 max. volts	
Screen Voltage	125 max. volts	
Screen Supply Voltage	300 max. volts	
Grid Voltage	0 min. volts	
Plate Dissipation	0.75 max. watt	
Screen Dissipation	0.1 max. watt	

#### Typical Operation:

Plate	100	250	volts
Screen	100	100	volts
Grid #	-3	-3	volts
Suppressor	Connected to cathode at socket		
Plate Res.	1.0	†	megohm
Transcond.	1185	1225	umhos
Grid Bias (approx.) for cathode-current cut-off	-7	-7	volts
Plate Cur.	2	2	ma.
Screen Cur.	0.5	0.5	ma.

### AMPLIFIER - Class A<sub>1</sub> (Triode Connection)††

Plate Voltage	250 max. volts	
Grid Voltage	0 min. volts	

\* With shell connected to cathode. #, ■: See next page.  
<sup>o</sup> With close-fitting shield connected to cathode. † Greater than 1.0 megohm.  
 • Without shield-can. †† Screen and suppressor connected to plate.

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MAY, 1940

SYDNEY, AUSTRALIA

6J7  
6J7-G

# RADIOTRON

6J7, 6J7-G

## TRIPLE-GRID DETECTOR AMPLIFIER

(continued from preceding page)

Plate & Screen Dissipation (Total)				1.75 max. watts
Typical Operation:				
Plate	180	250	volts	
Grid #	-5.3	-8	volts	
Amp. Fact.	20	20		
Plate Res.	11000	10500	ohms	
Transcond.	1800	1900	μmhos	
Plate Cur.	5.3	6.5	ma.	

### DETECTOR

Typical Operating Conditions as Biased Detector:

Plate Supply <sup>◇</sup>	100	100	250	250	volts
Screen	12	30	50	100	volts
Grid #	-1.2	-1.8	-2	-4.3	volts
Cathode Res.	18000	10000	3000	10000	ohms
Suppressor	Connected to cathode at socket				
Zero-Sig. Cath. Cur.	0.063	0.183	0.65	0.43	ma.
Plate Resistor	1.0	0.25	0.25	0.5	megohm
Blocking Condenser	0.01	0.01	0.3	0.3	μf
Grid Resistor <sup>○○</sup>	1.0	0.5	0.25	0.25	megohm
R-F Signal (RMS) <sup>●●</sup>	1.05	1.6	1.18	1.37	volts

<sup>○○</sup> For the following amplifier tube.<sup>●●</sup> With these signal values modulated 20%, the voltage output under each set of conditions is 17 peak volts at the grid of the following amplifier. This value is sufficient to insure full audio output from a 6F6 (class A pentode) at 250 volts on plate.<sup>◇</sup> Voltage at plate will be "Plate Supply" voltage minus voltage drop in plate resistor caused by plate current.<sup>\*</sup> The d-c resistance in the grid circuit should not exceed 1.0 megohm.  
<sup>■</sup> In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

MAY, 1940

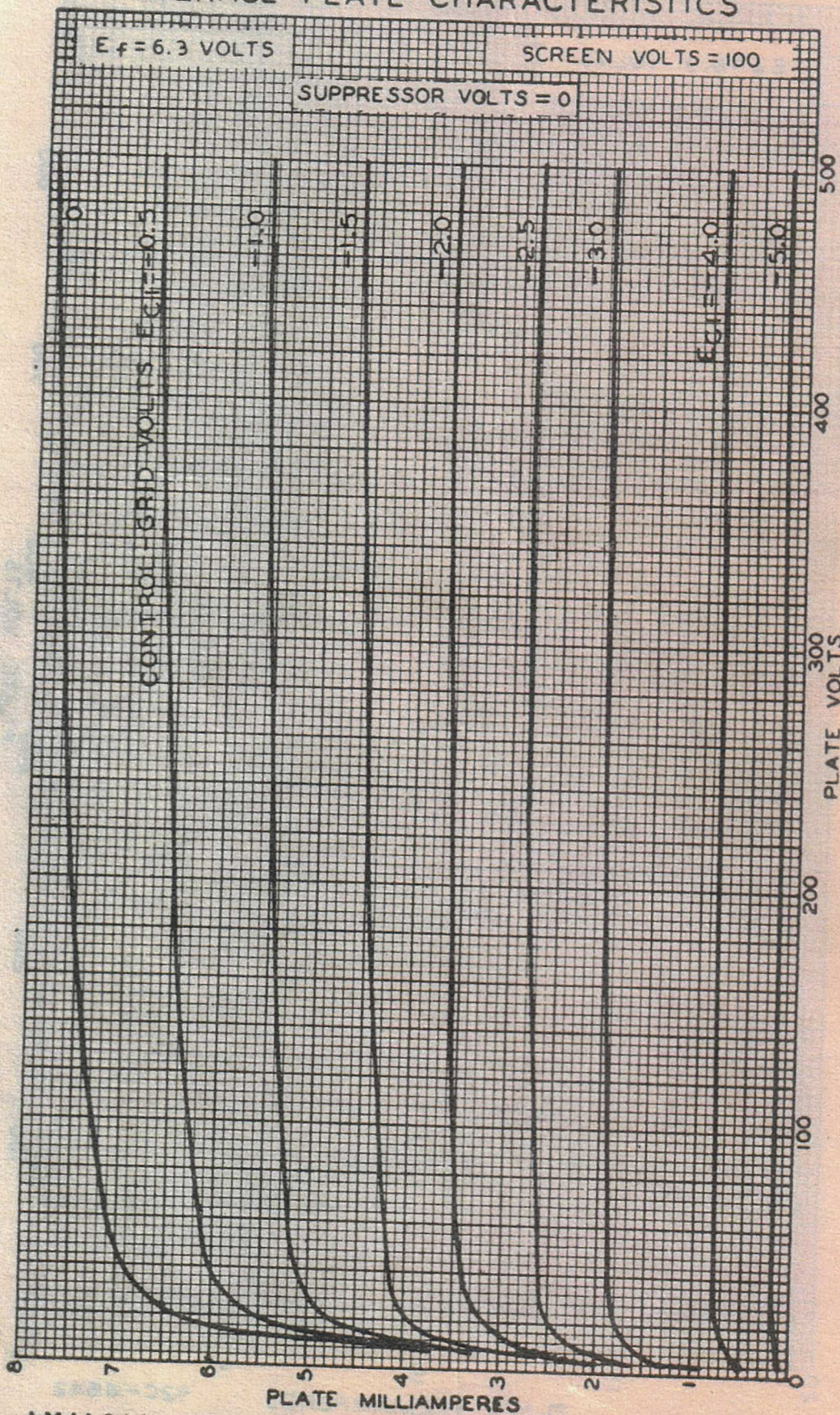
SYDNEY, AUSTRALIA

# RADIOTRON

6J7, 6J7-G

6J7  
6J7-G  
SHEET 2

## AVERAGE PLATE CHARACTERISTICS



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PLATE MILLIAMPERES

WIRELESS VALVE CO. PTY. LTD.  
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6J7  
6J7-G

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6J7, 6J7-G

AVERAGE PLATE CHARACTERISTICS  
TRIODE CONNECTION

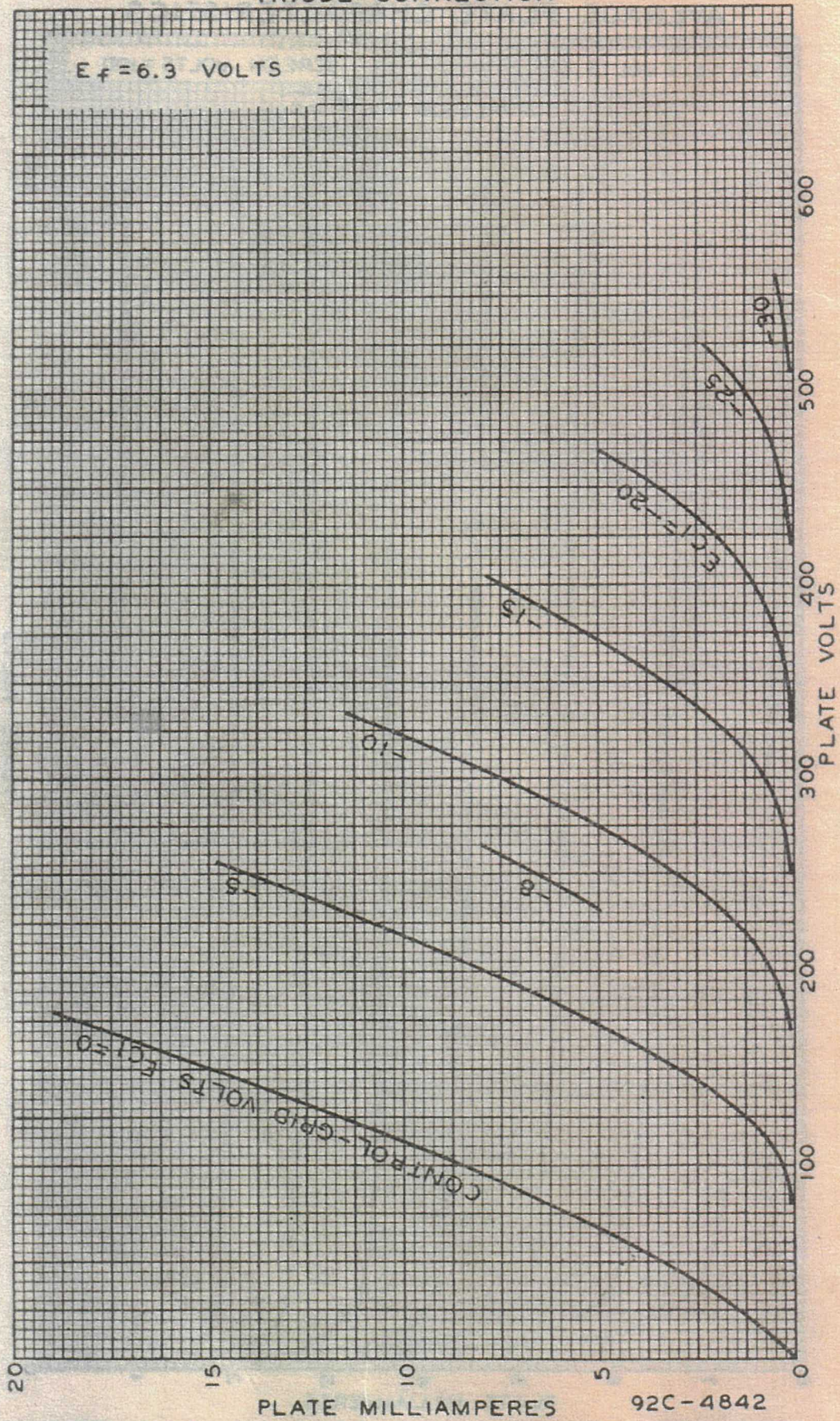


PLATE MILLIAMPERES

92C-4842

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JULY, 1939

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# RADIOTRON

## 6J8-G

6J8-G



### TRIODE-HEPTODE CONVERTER

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances (With Standard Shield):		
Heptode Grid No.1 to Heptode Plate	0.01 max.	μf
Heptode Grid No.1 to Triode Grid & Heptode Grid No.3	0.13	μf
Heptode Grid No.1 to Triode Plate	0.015	μf
Triode Grid & Heptode Grid No.3 to Triode Plate	2.2	μf
R.F. Input (Heptode Grid No.1 to All Other Electrodes)	4.4	μf
Osc. Output (Triode Plate to All Other Electrodes)	5.5	μf
Osc. Input (Triode Grid & Heptode Grid No.3 to All Other Electrodes)	11.7	μf
Mixer Output (Heptode Plate to All Other Electrodes)	8.8	μf
Maximum Overall Length	4-17/32"	
Maximum Diameter	1-9/16"	
Bulb	ST-12	
Cap	Skirted Miniature	
Base	Small Shell Octal 8-Pin	
Pin 1-No Connection	Pin 6-Triode Plate	
Pin 2-Heater	Pin 7-Heater	
Pin 3-Heptode Plate	Pin 8-Cathode	
Pin 4-Heptode Grids #2 & #4	Cap -Heptode Grid #1	
Pin 5-Heptode Grid #3 & Triode Grid		

BOTTOM VIEW

Mounting Position	Vertical, Base Down	
<u>CONVERTER SERVICE</u>		
Heptode Plate Voltage	300 max.	volts
Heptode Screen (Grids Nos.2 & 4) Voltage	100 max.	volts
Heptode Screen Supply Voltage	300 max.	volts
Heptode Control-Grid (Grid No.1) Voltage	0 min.	volts
Triode Plate Voltage	250 max.	volts
Heptode Plate Dissipation	0.9 max.	watt
Heptode Screen Dissipation	0.4 max.	watt
Triode Plate Dissipation	0.8 max.	watts
Typical Operation:		
Heater Voltage	6.3	volts
Heptode Plate Voltage	100	volts
Heptode Screen Voltage	100	volts
Heptode Control-Grid Voltage	-3	volts
Triode Plate Voltage	100	volts
Triode Grid Resistor	50000	ohms
Heptode Plate Resistance	0.9	megohms
Conversion Transconductance	250	μmhos
Heptode Control Grid Bias for Conver. Transcond.=2 μmhos	-20	volts
Heptode Plate Current	1.4	ma.
Heptode Screen Current	3.0	ma.
Triode Plate Current	3.0	ma.
Triode Grid & Heptode Grid No.3 Current	0.3	ma.

<u>TRIODE SECTION</u>		
Plate Voltage	100	volts
Grid Voltage	0	volts
Amplification Factor	17	
Plate Resistance	10600	ohms
Transconductance	1600	μmhos
Plate Current	7	ma.

° Applied through a 20000 ohm dropping resistor.

6J8-G

# RADIOTRON

## 6J8-G

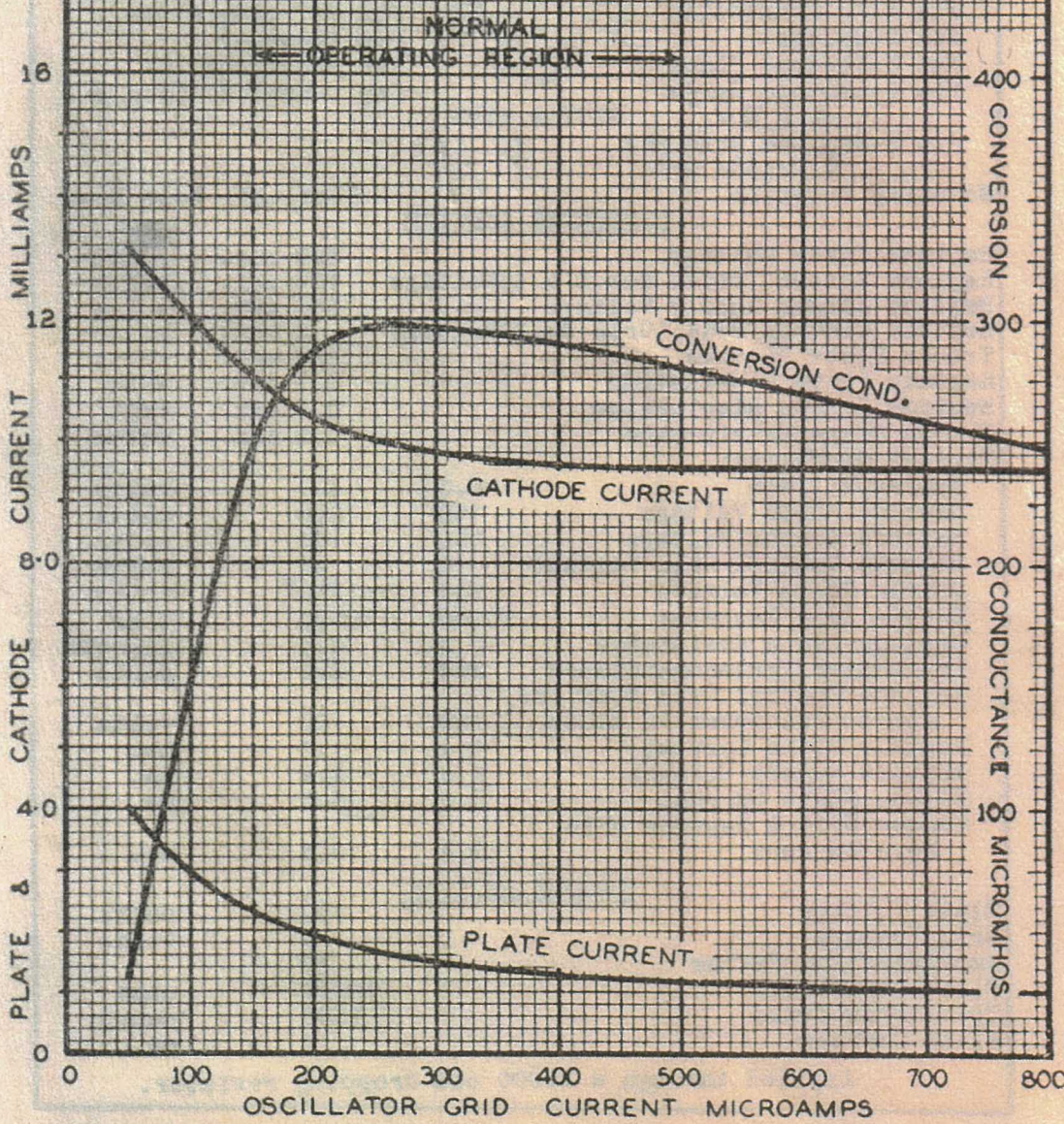
### OPERATION CHARACTERISTICS

A.W.V. 130

#### RADIOTRON 6J8-G

- $E_F = 6.3 \text{ V.}$
- $E_P = 250 \text{ V.}$
- $E_{G1} = -3 \text{ V.}$
- $E_{G2,4} = 100 \text{ V.}$

OSC. PLATE FED FROM +250 V. THROUGH  
A 20,000  $\Omega$  RESISTOR.  
OSCILLATOR GRID RESISTOR = 50,000  $\Omega$



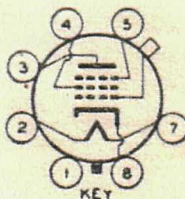
# RADIOTRON

## 6K7-GT

 6K7-GT  
 SHEET 1
 

### TRIPLE - GRID SUPER - CONTROL AMPLIFIER

Heater *	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances (approx.):		
Grid to Plate <sup>•</sup>	0.005 max.	μμF
Input <sup>•</sup>	4.6	μμF
Output <sup>•</sup>	12	μμF
Cathode to Plate <sup>◦</sup>	5.5	μμF
Cathode to All Other Electrodes <sup>◦</sup>	9.0	μμF
Maximum Overall Length		3-5/16"
Maximum Diameter		1-5/16"
Bulb		T-9
Cap		Skirted Miniature
Mounting Position		Any
Base	Intermediate Shell Octal 7-Pin	
Pin 1-No connection		Pin 5-Suppressor & Int. Shield
Pin 2-Heater		Pin 7-Heater
Pin 3-Plate		Pin 8-Cathode
Pin 4-Screen		Cap -Grid



BOTTOM VIEW

#### AMPLIFIER-Class A

Plate Voltage	300 max. volts
Screen Voltage	125 max. volts
Screen Supply Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	2.75 max. watt
Screen Dissipation	0.35 max. watt

#### Typical Operation:

Plate Voltage	100	250	volts
Screen Voltage	100	100	volts
Grid Voltage <sup>Δ</sup>	-3	-3	volts
Suppressor	Connected to cathode at socket		
Plate Res. (approx.)	0.25	0.8	megohm
Transconductance	1500	1600	μmhos
Grid Bias for transcon- ductance of 2 μmhos	-50	-50	volts
Plate Current	8.0	8.2	mA.
Screen Current	2.2	2.0	mA.

\* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

• With close-fitting shield-can connected to cathode.

◦ With close-fitting shield-can connected to all other electrodes.

Δ The grid circuit resistance should not exceed 3 megohms for a single controlled stage, 2.5 megohms for two controlled stages, or 2 megohms for three controlled stages.

For characteristic curves see under type 6U7-G.

# RADIOTRON

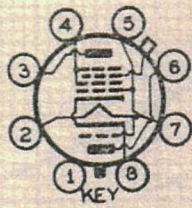
## 6K8-G

### TRIODE-HEXODE CONVERTER

# 6K8-G



Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances (With Standard Shield):		
Hexode Grid No.3 to Hexode Plate		0.04 $\mu$ mf
Hexode Grid No.3 to Triode Grid & Hexode Grid No.1		0.1 $\mu$ mf
Triode Grid & Hexode Grid No.1 to Triode Plate		2.0 $\mu$ mf
R.F. Input (Hexode Grid No.3 to All Other Electrodes)		5.5 $\mu$ mf
Osc. Output (Triode Plate to All Other Electrodes except Osc. Grid)		4.0 $\mu$ mf
Osc. Input (Triode Grid to All Other Electrodes except Triode Plate)		7.0 $\mu$ mf
Mixer Output (Hexode Plate to All Other Electrodes)		5.5 $\mu$ mf
Maximum Overall Length	4-7/32"	to 4-15/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Skirted Miniature
Base		Small Shell Octal 8-Pin
Pin 1-No Connection		Pin 6-Triode Plate
Pin 2-Heater		Pin 7-Heater
Pin 3-Hexode Plate		Pin 8-Cathode & Deflector Plates
Pin 4-Hexode Grids #2 & #4		Cap -Hexode Grid #3
Pin 5-Hexode Grid #1 & Triode Grid		



BOTTOM VIEW

## Mounting Position

#### CONVERTER SERVICE

Any

Hexode Plate Voltage		300 max.	volts
Hexode Screen (Grids #2 & #4) Voltage		150 max.	volts
Hexode Screen Supply Voltage		300 max.	volts
Hexode Control-Grid (Grid #3) Voltage		0 min.	volts
Triode Plate Voltage		125 max.	volts
Hexode Plate Dissipation		0.75 max.	watt
Hexode Screen Dissipation		0.7 max.	watt
Triode Plate Dissipation		0.75 max.	watt
Total Cathode Current		16 max.	ma.
Typical Operation:			
Heater Voltage	6.3	6.3	volts
Hexode Plate Voltage	100	250	volts
Hexode Screen Voltage	100	100 <sup>o</sup>	volts
Hexode Control-Grid Voltage	-3	-3	volts
Triode Plate Voltage	100	100 <sup>o</sup>	volts
Triode Grid Resistor	50000	50000	ohms
Hexode Plate Resistance	0.4	0.6 min.	megohm
Conversion Transconductance	325	350	$\mu$ mhos
Hexode Control-Grid Bias			
Conver. Transcond.=2 $\mu$ mhos	-30	-30	volts
Hexode Plate Current	2.3	2.5	ma.
Hexode Screen Current	6.2	6.0	ma.
Triode Plate Current	3.8	3.8	ma.
Triode Grid & Hexode Grid No.1 Current	0.15	0.15	ma.
Total Cathode Current	12.5	12.5	ma.
Oscillator Transcandance for Triode Plate=100Volts			
Triode Grid=Zero Volts		3000	$\mu$ mhos

\* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

o Should be supplied through common 15000 ohm dropping resistor.

## AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

SEPTEMBER, 1940

SYDNEY, AUSTRALIA

6K8-G

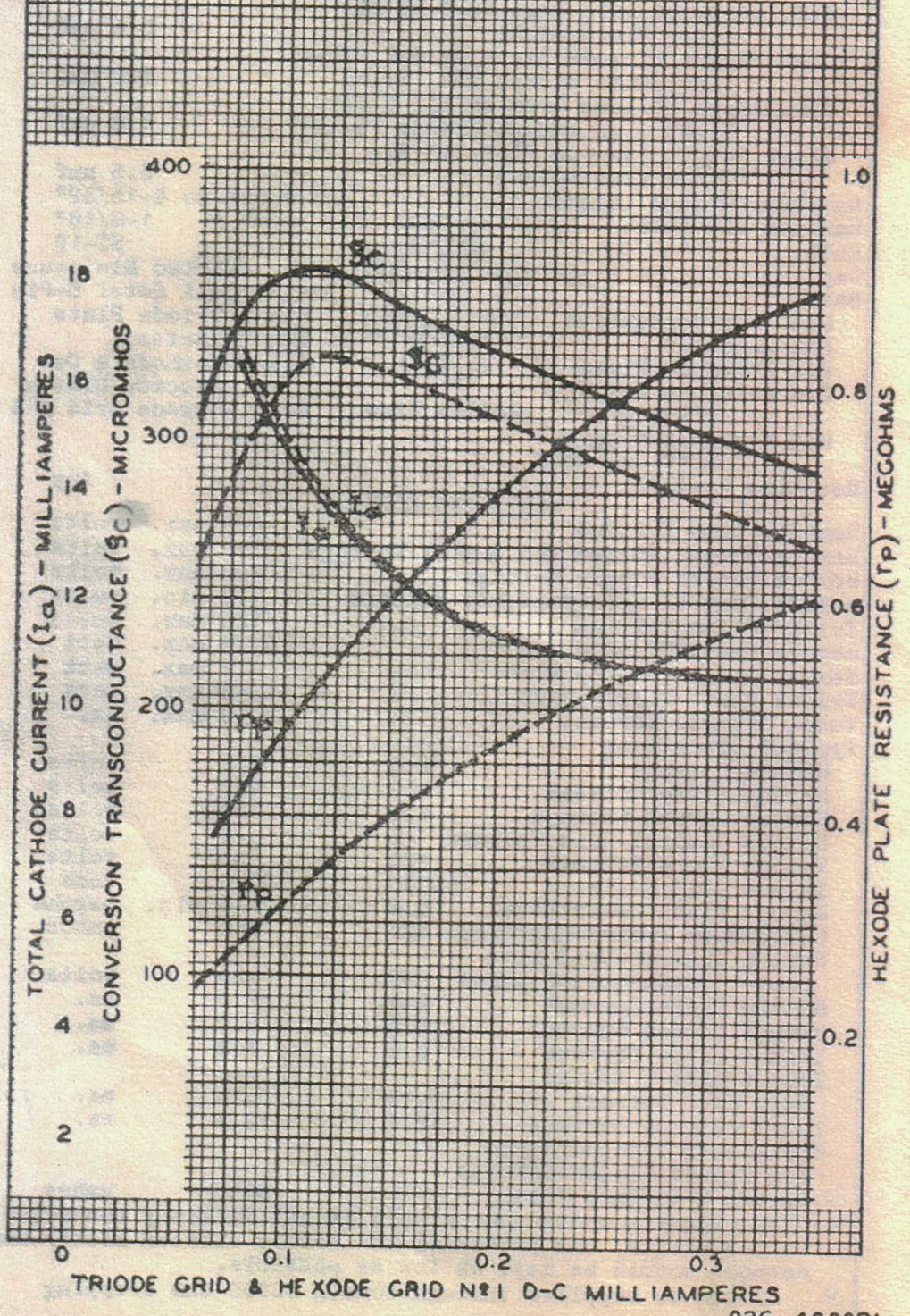
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## 6K8-G

### OPERATION CHARACTERISTICS

$E_f = 6.3$  VOLTS

CURVE		---	---
HEXODE	PLATE VOLTS	100	250
TRIODE	PLATE VOLTS	100	100
HEXODE	SCREEN (GRIDS N <sup>o</sup> 2 & 4) VOLTS	100	100
HEXODE	CONTROL-GRID (GRID N <sup>o</sup> 3) VOLTS	-3	-3
TRIODE	GRID RESISTOR (OHMS)	50000	50000



TRIODE GRID & HEXODE GRID N<sup>o</sup> 1 D-C MILLIAMPERES

92C-4886R1

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
 SEPTEMBER, 1949  
 SYDNEY, AUSTRALIA

# RADIOTRON

6L6, 6L6-G *14/6*

6L6-G  
SHEET 1

## BEAM POWER AMPLIFIER

Heater <sup>■</sup> Coated Unipotential Cathode  
 Voltage 6.3 a-c or d-c volts  
 Current 0.9 amp.

	6L6	6L6-G
Maximum Overall Length	4-5/16"	5-5/16"
Maximum Seated Height	3-3/4"	4-3/4"
Maximum Diameter	1-5/8"	2-1/16"
Bulb	Metal Shell, MT-10	ST-16
Base	{ Small Wafer { Octal 7-Pin	Medium Shell Octal 7-Pin
Basing Designation	TAC	G-7AC
Pin 1 { 6L6, Shell { 6L6-G, No Con.		Pin 4 - Screen
Pin 2 - Heater		Pin 5 - Grid
Pin 3 - Plate		Pin 7 - Heater
Mounting Position		Pin 8 - Cathode

BOTTOM VIEW

### SINGLE-VALVE AMPLIFIER - Class A<sub>1</sub><sup>‡</sup>

Plate Voltage 360 max. volts  
 Screen Voltage 270 max. volts  
 Plate Dissipation 19 max. watts  
 Screen Dissipation 2.5 max. watts  
 Typical Operation:

	Fixed Bias		Cathode Bias		
	250	350	250	300	
Plate	250	350	250	300	volts
Screen	250	250	250	200	volts
Grid*	-14	-18	-	-	volts
Cathode Resistor	-	-	170	220	ohms
Peak A-F Grid Volt.	14	18	14	12.5	volts
Zero-Sig. Plate Cur.	72	54	75	51	ma.
Max.-Sig. Plate Cur.	79	66	78	54.5	ma.
Zero-Sig. Screen Cur.	5	2.5	5.4	3	ma.
Max.-Sig. Screen Cur.	7.3	7	7.2	4.6	ma.
Plate Res.	22500	33000	-	-	ohms
Transcond.	6000	5200	-	-	μmhos
Load Resistance	2500	4200	2500	4500	ohms
Total Harmonic Dist.	10	15	10	11	%
Max.-Sig. Power Output	6.5	10.8	6.5	6.5	watts

### SINGLE-VALVE AMPLIFIER - Class A<sub>1</sub><sup>‡</sup> (Triode Connection)<sup>†</sup>

Plate Voltage 250 max. volts  
 Plate & Screen Dissipation (Total) 10 max. watts  
 Typical Operation:

	Fixed Bias	Cathode Bias	
	250	250	
Plate	250	250	volts
Grid*	-20	-	volts
Cathode Resistor	-	490	ohms

<sup>■</sup> The heater should be operated at 6.3 volts. Under maximum dissipation conditions, the heater voltage should never fluctuate so that it exceeds 7.0 volts. The potential difference between heater and cathode should be kept as low as possible.

<sup>†</sup> Screen tied to plate.

<sup>‡</sup>, \*; See next page.

← Indicates a change.

6L6  
6L6-G

# RADIOTRON

6L6, 6L6-G

## BEAM POWER AMPLIFIER

(continued from preceding page)

	Fixed Bias	Cathode Bias	
Peak A-F Grid Voltage	20	20	volts
Zero-Sig. Plate Cur.	40	40	ma.
Max.-Sig. Plate Cur.	44	42	ma.
Plate Resistance	1700	-	ohms
Amp. Factor	8	-	
Transconductance	4700	-	μmhos
Load Resistance	5000	6000	ohms
Total Harmonic Distortion	5	6	%
Max.-Sig. Power Output	1.4	1.3	watts

### PUSH-PULL AMPLIFIER - Class A<sub>1</sub>\*

Plate Voltage	360 max.	volts
Screen Voltage	270 max.	volts
Plate Dissipation	19 max.	watts
Screen Dissipation	2.5 max.	watts

Typical Operation:

Values are for 2 valves.

	Fixed Bias		Cathode Bias	
Plate	250	270	270	volts
Screen	250	270	270	volts
Grid*	-16	-17.5	-	volts
Cathode Resistor	-	-	125	ohms
Peak A-F Grid-to-Grid Voltage	32	35	40	volts
Zero-Sig. Plate Cur.	120	134	134	ma.
Max.-Sig. Plate Cur.	140	155	145	ma.
Zero-Sig. Screen Cur.	10	11	11	ma.
Max.-Sig. Screen Cur.	16	17	17	ma.
Plate Res.	24500	23500	-	ohms
Transcond.	5500	5700	-	μmhos
Effective Load Resistance (plate to plate)	5000	5000	5000	ohms
Total Harmonic Dist.	2	2	2	%
Max.-Sig. Power Output	14.5	17.5	18.5	watts

### PUSH-PULL AMPLIFIER - Class AB<sub>1</sub>\*

Plate Voltage	360 max.	volts
Screen Voltage	270 max.	volts
Plate Dissipation	19 max.	watts
Screen Dissipation	2.5 max.	watts

Typical Operation:

Values are for 2 valves.

	Fixed Bias		Cathode Bias	
Plate	360	360	360	volts
Screen	270	270	270	volts
Grid*	-22.5	-22.5	-	volts
Cathode Resistor	-	-	250	ohms

\* Subscript 1 indicates that grid current does not flow during any part of input cycle.

\* See next page.

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SEPTEMBER, 1940  
SYDNEY, AUSTRALIA

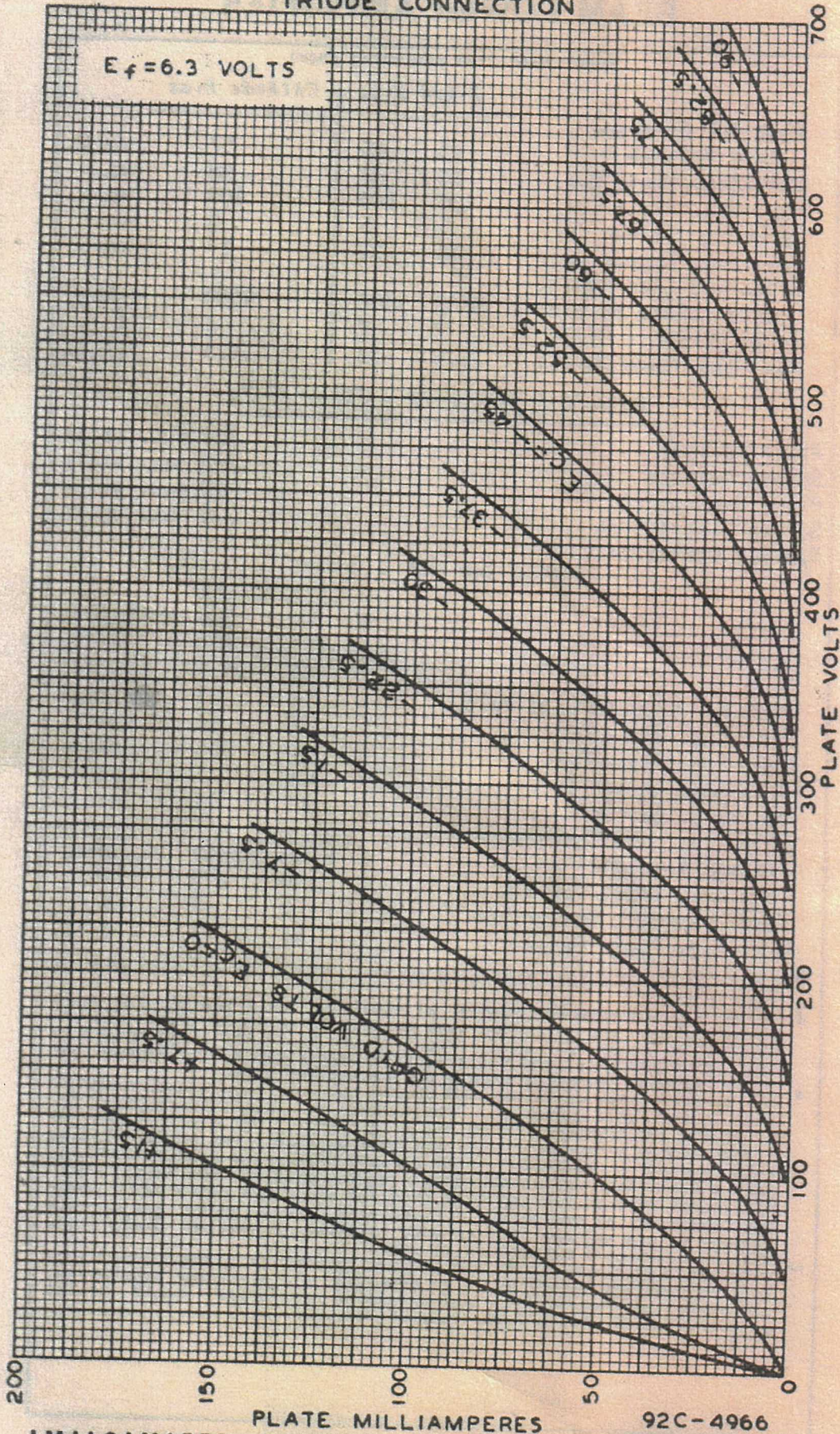


6L6

# RADIOTRON

6L6

## AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



# RADIOTRON

## 6U5/6G5

6U5/6G5

### ELECTRON-RAY TUBE

INDICATOR TYPE WITH TRIODE UNIT

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Overall Length	3-13/16" to 4-3/16"	
Maximum Diameter	1-3/16"	
Bulb	T-9	
Base	Small 6-Pin	
Pin 1 - Heater		Pin 4 - Target
Pin 2 - Plate		Pin 5 - Cathode
Pin 3 - Grid		Pin 6 - Heater
Mounting Position		BOTTOM VIEW

#### MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

Plate-Supply Voltage	250 max.			volts
Target Voltage	250 max.			volts
	100 min.			volts
Typical Operation:				
Heater *	6.3	6.3	6.3	volts
Plate & Target Supply	100	200	250	volts
Series Triode-Plate Resistor $\square$	0.5	1	1	megohm
Target Current $\dagger$	1.0	3.0	4.0	ma.
Triode-Plate Current $\circ$	0.19	0.19	0.24	ma.
Triode-Grid Voltage $\infty$	-8	-18.5	-22	approx. volts
Triode-Grid Voltage $\#$	0	0	0	approx. volts

$\circ$  For zero triode-grid voltage.

$\infty$  For shadow angle of  $0^\circ$ .

$\#$  For shadow angle of  $90^\circ$ .

$\square$  Designated as R in circuit diagram. See Type 6E5.

\* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

$\dagger$  Subject to wide variations.

The 6U5/6G5 is similar to the 6E5 except for the triode unit which is designed with remote cut-off. Refer to Type 6E5 for a discussion of the operation of the tube and also for the fundamental circuit.

*The 6U5/6G5 will supersede the 6G5 and the 6U5.*

6U5/6G5

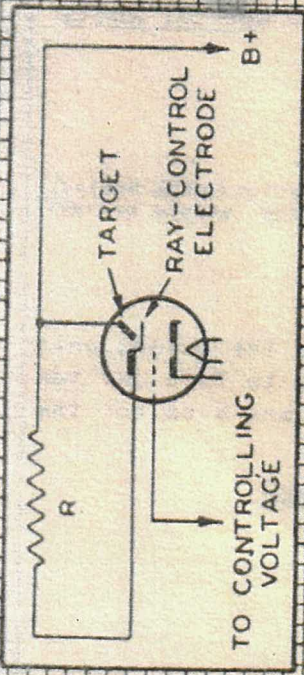
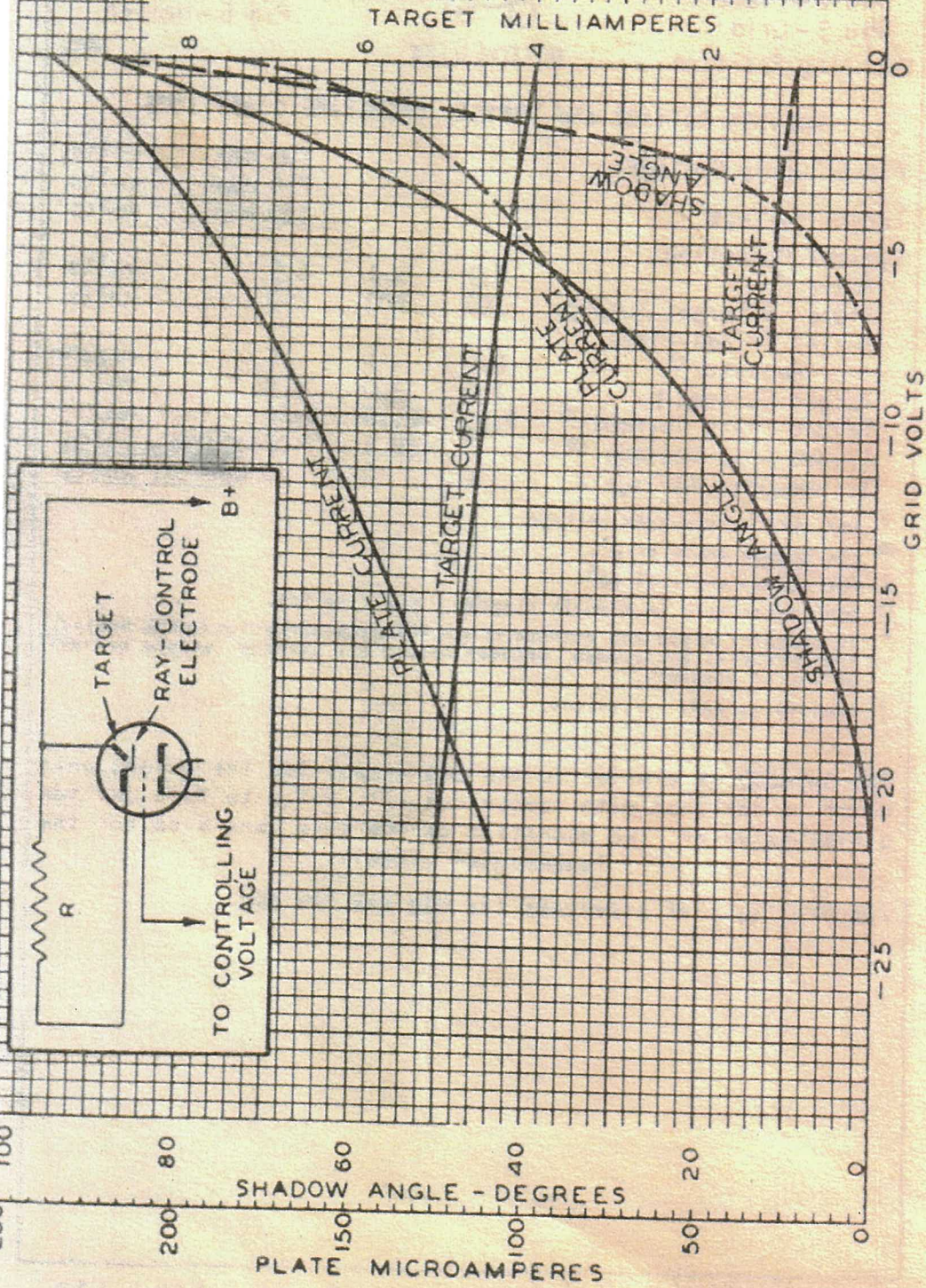
# RADIOTRON

6U5/6G5

## AVERAGE CONTROL CHARACTERISTICS

$E_f = 6.3$  VOLTS

CURVE	PLATE-SUPPLY VOLTS (B+)	SERIES PLATE RESISTOR (R)-MEG.
—	250	1.0
- - -	100	0.5



# RADIOTRON

## 6U7-G

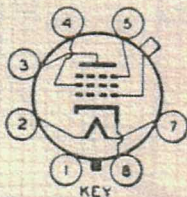
 6U7-G  
 SHEET 1
 

### TRIPLE - GRID SUPER - CONTROL AMPLIFIER

Heater ★	Coated Unipotential Cathode #	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances: ●		
Grid to Plate	0.007 max.	μμF
Input	5	μμF
Output	9	μμF

Maximum Overall Length	4-29/32"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap	Skirted Miniature
Mounting Position	Any
Base	Small Shell Octal 7-Pin

- Pin 1-No Connection
- Pin 2-Heater
- Pin 3-Plate
- Pin 4-Screen



- Pin 5-Suppressor
- Pin 7-Heater
- Pin 8-Cathode
- Cap -Grid

BOTTOM VIEW

#### AMPLIFIER-Class A.

Plate Voltage	300 max. volts
Screen Voltage	125 max. volts
Screen Supply Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	2.75 max. watt
Screen Dissipation	0.35 max. watt

#### Typical Operation:

Plate Voltage	100	250	volts
Screen Voltage	100	100	volts
Grid Voltage Δ	-3	-3	volts
Suppressor	Connected to cathode at socket		
Plate Res. (approx.)	0.25	0.8	megohm
Transconductance	1500	1600	μmhos
Grid Bias for transcon- ductance of 2 μmhos	-50	-50	volts
Plate Current	8.0	8.2	mA.
Screen Current	2.2	2.0	mA.

★ In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

# The internal shield in the dome of the 6U7-G is connected to the cathode within the valve.

● With close-fitting shield-can connected to cathode.

Δ The grid circuit resistance should not exceed 3 megohms for a single controlled stage, 2.5 megohms for two controlled stages, or 2 megohms for three controlled stages.

Characteristic curves for this type apply also to type 6K7-CT

6U7-G

# RADIOTRON

6U7-G

## AVERAGE PLATE CHARACTERISTICS

$E_f = 6.3$  VOLTS SUPPRESSOR VOLTS = 0 SCREEN VOLTS = 100

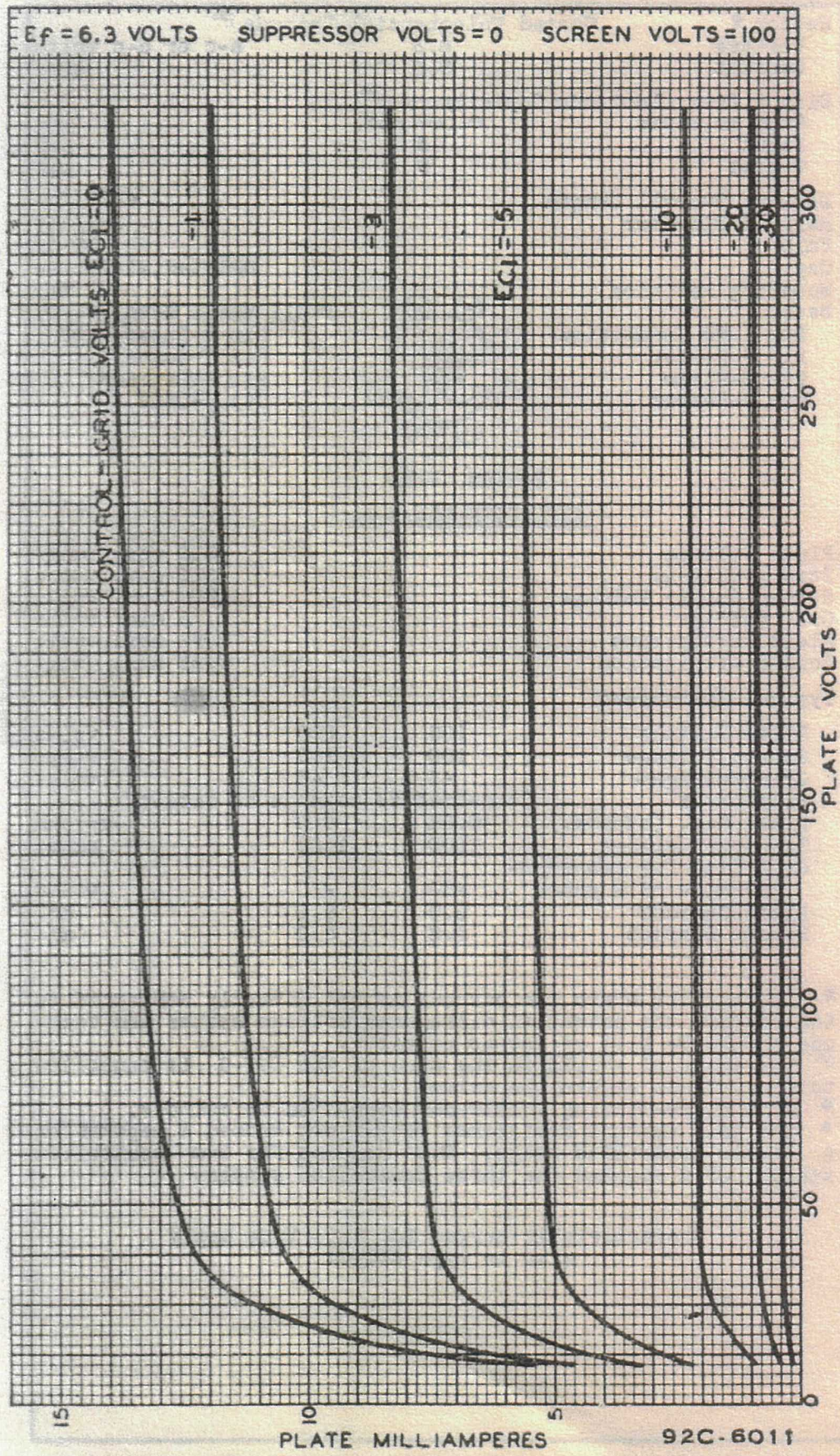


PLATE MILLIAMPERES

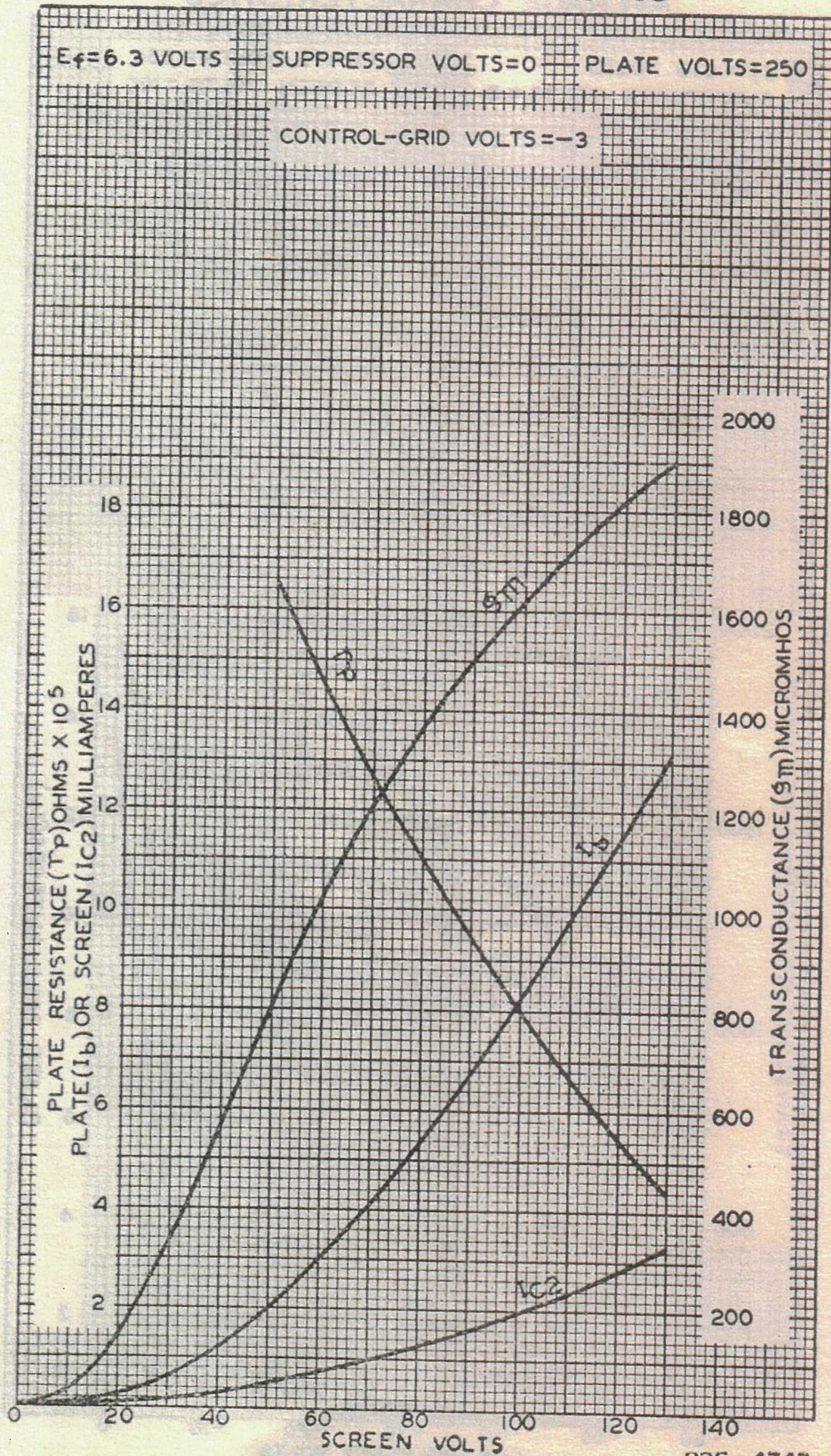
92C-6011

ALBERTSON COMPANY

# RADIOTRON

## 6U7-G

### AVERAGE CHARACTERISTICS



92C-4743

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
JULY, 1941  
SYDNEY, AUSTRALIA

6U7-G

# RADIOTRON

6U7-G

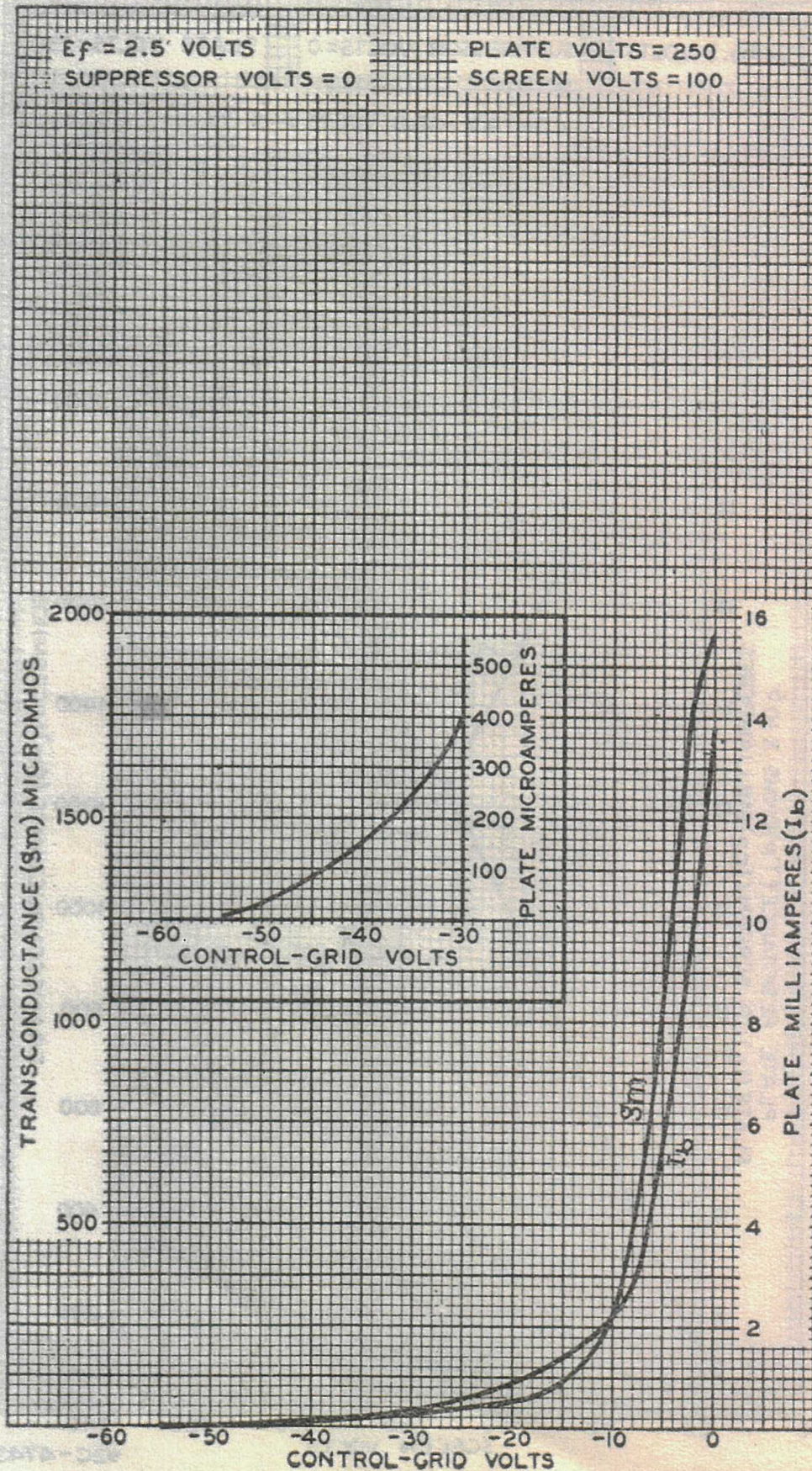
## AVERAGE CHARACTERISTICS

$E_f = 2.5$  VOLTS

SUPPRESSOR VOLTS = 0

PLATE VOLTS = 250

SCREEN VOLTS = 100



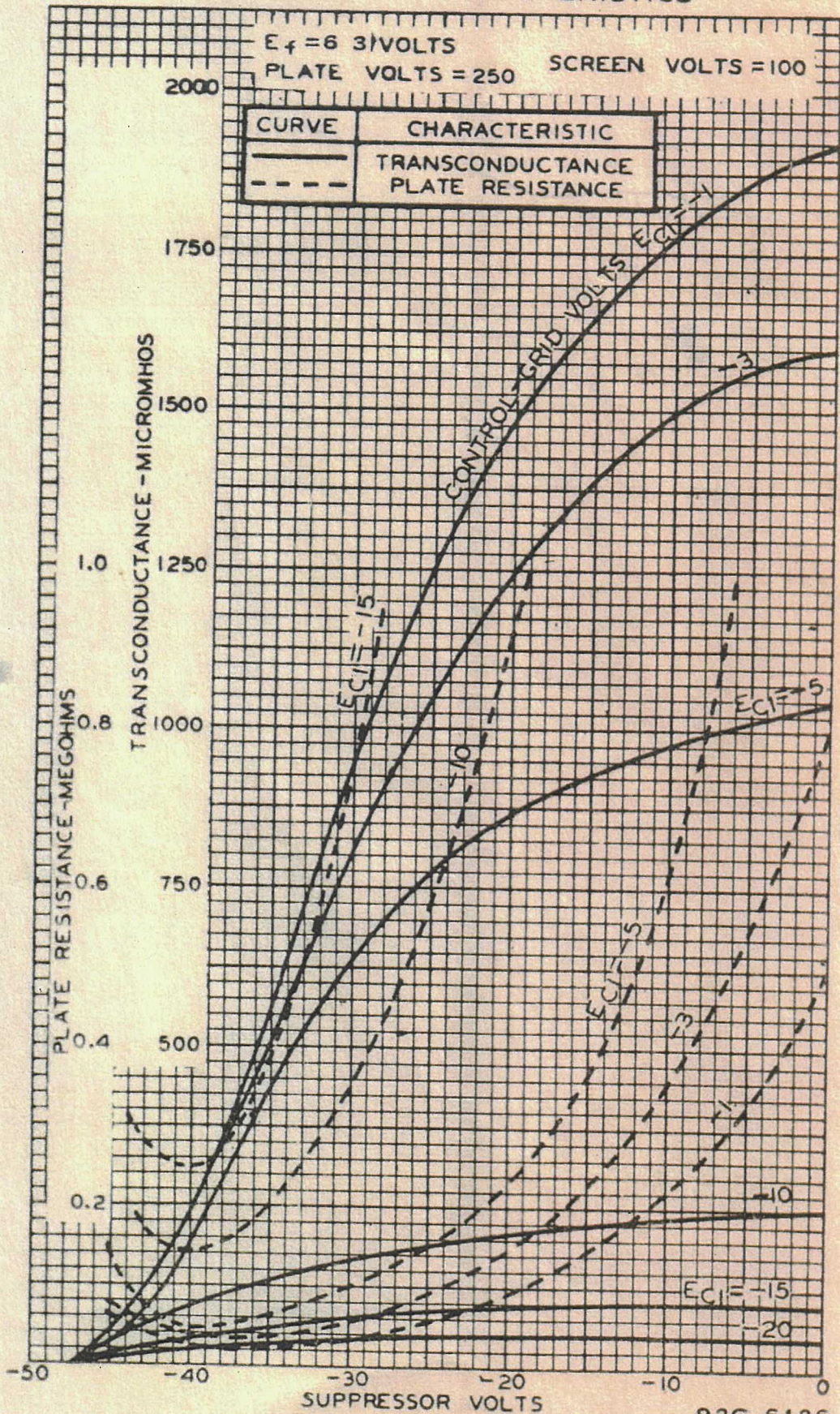
92C-6121

# RADIOTRON

6U7-G

6U7-G  
SHEET 3

## AVERAGE CHARACTERISTICS



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
APRIL, 1940  
SYDNEY, AUSTRALIA

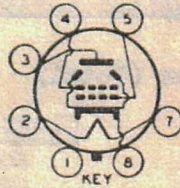
# RADIOTRON

## 6V6-G

### BEAM POWER AMPLIFIER

6V6-G  
SHEET 1

Heater <sup>■</sup>	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.45	amp.
Maximum Overall Length		4-5/8" ←
Maximum Seated Height		4-1/16" ←
Maximum Diameter		1-13/16" ←
Bulb		ST-14
Mounting Position		Any
Base		Medium Shell Octal 7-Pin
Pin 1-No Connection		Pin 5-Grid
Pin 2-Heater		Pin 7-Heater
Pin 3-Plate		Pin 8-Cathode
Pin 4-Screen		



BOTTOM VIEW (G-7AC)

#### SINGLE VALVE AMPLIFIER-Class A<sub>1</sub>

Plate Voltage				315 max. volts
Screen Voltage				285 max. volts ←
Plate Dissipation				12 max. watts ←
Screen Dissipation				2 max. watts ←
Typical Operation:				
Plate Voltage	180	250	250	315 volts ←
Screen Voltage	180	100	250	225 volts ←
Grid Voltage <sup>Δ</sup>	-8.5	-5	-12.5	-13 volts ←
Cath. Bias Res. <sup>○</sup>	250	250	232	317 ohms ←
Peak A-F Grid Volts	8.5	5	12.5	13 volts ←
Zero-Sig. Plate Cur.	29	17.5	45	34 mA. ←
Max.-Sig. Plate Cur.	30	18.4	47	35 mA. ←
Zero-Sig. Scrn. Cur. <sup>★</sup>	3	0.7	4.5	2.2 mA. ←
Max.-Sig. Scrn. Cur. <sup>★</sup>	4	1.3	7	6 mA. ←
Plate Resistance	.058	.094	.052	.077 meg. ←
Transconductance	3,700	3,440	4,100	3,750 μmhos ←
Load Resistance	5,500	14,000	5,000	8,500 ohms ←
Total Harm. Dist.	8	5	8	12 % ←
Max.-Sig. Pwr. Output	2	1.5	4.5	5.5 watts ←

#### AMPLIFIER - Class A<sub>1</sub> (Triode Connection<sup>?</sup>)

Plate Voltage			300 max. volts
Plate & Screen Dissipation (Total)			12.5 max. watts ←
Typical Operation:			
Plate Voltage	250		300 volts ←
Grid Voltage <sup>Δ</sup>	-15		-20 volts ←
Cathode Bias Res. <sup>○</sup>	400		513 ohms ←
Zero-Sig. Plate Cur.	37.5		39 mA. ←
Amplification Factor	9.6		9.6 ←
Plate Resistance	2,400		2,400 ohms ←
Transconductance	4,000		4,000 μmhos ←
Load Resistance	3,500		4,800 ohms ←
Second Harm. Dist.	5		5 % ←
Max.-Sig. Pwr. Output	1.0		1.65 watts ←

#### PUSH-PULL AMPLIFIER - Class AB<sub>1</sub>

Plate Voltage				315 max. volts
Screen Voltage				285 max. volts ←
Plate Dissipation				12 max. watts ←
Screen Dissipation				2 max. watts ←
Typical Operation:				
Values are for two valves				
Plate Voltage	250	285	315	volts
Screen Voltage	250	285	250	volts
Grid Voltage <sup>Δ</sup>	-15	-19	-15.6	volts
Peak A-F Volts (G-G)	30	38	30	volts
Zero-Sig. Plate Cur:	70	70	76.5	mA.
Max.-Sig. Plate Cur.	79	92	70	mA.

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

AUGUST 1941

SYDNEY, AUSTRALIA

6V6-G

## RADIOTRON

6V6-G

## BEAM POWER AMPLIFIER

Zero-Sig. Screen Cur.*	5	4	4.9	mA.
Max.-Sig. Screen Cur.*	13	13.5	10.5	mA.
Eff. Load Res. (P-P)	10,000	8,000	12,000	ohms
Total Harm. Distortion	5	3.5	-	%
Max.-Sig. Pwr. Output	10	14	13	watts

PUSH-PULL AMPLIFIER (Triode Connection\*)

Plate Voltage 300 max. volts  
 Plate & Screen Dissipation (Total) 12.5 max. watts

## Typical Operation:

	Class A <sub>1</sub>	Class AB <sub>1</sub>	
Plate Voltage	300	300	volts
Grid Voltage <sup>▲</sup>	-20	-25	volts
Cathode Bias Resistor	256	-	ohms
Peak A-F Volts (G-G)	40	50	volts
Zero-Sig. Plate Cur.	78	42	mA.
Eff. Load Res. (P-P)	9,600	6,000	ohms
Max.-Sig. Power Output	3.3	4.75	watts

■ The heater should be operated at 6.3 volts. Under maximum dissipation conditions, the heater voltage should never fluctuate so that it exceeds 7.0 volts. The potential difference between heater and cathode should be kept as low as possible.

▲ The type of input coupling used should not introduce too much resistance in the grid circuit. Transformer or impedance coupling devices are recommended. When the grid circuit has a resistance not higher than .05 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm, provided the heater voltage is not allowed to rise more than 10% above the rated value under any condition of operation.

○ The requisite negative bias may be obtained from an external source or, alternatively, may be derived from a cathode bias resistor of the stated value. For this particular service the type of bias has negligible effect on the operation.

● Screen connected to plate at the socket.

●● Conditions as used in Radiotron circuit A504. The two screens are fed through a common 3,000 ohm resistor from the plate supply voltage; a bleed resistor of 15,000 ohms is connected between the screens and the cathodes, the common cathode bias resistor being 150 ohms. Both screens and cathodes must be suitably bypassed.

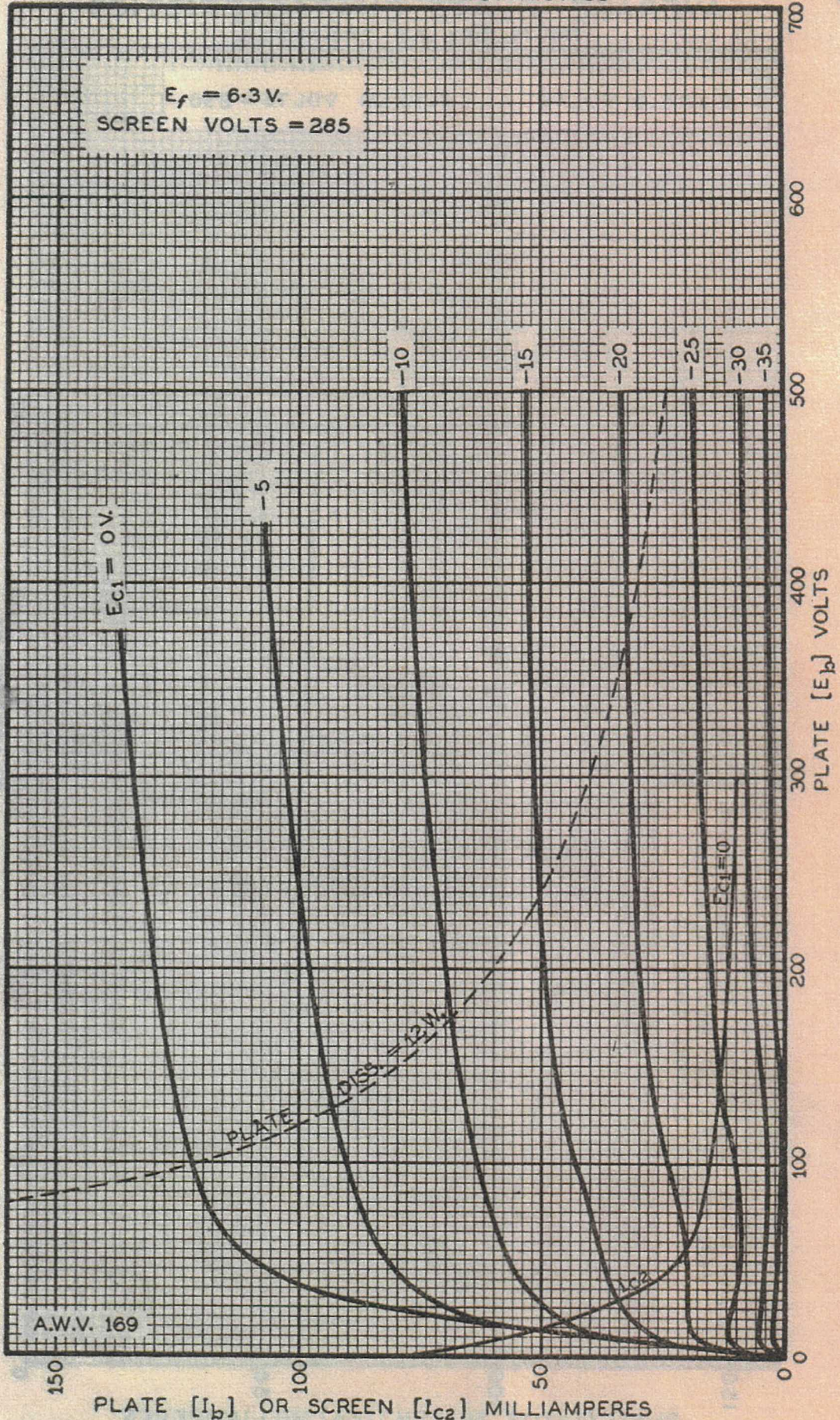
\* Nominal value; subject to variation from valve to valve.

← Indicates a change.

# RADIOTRON

## 6V6-G

### AVERAGE PLATE CHARACTERISTICS

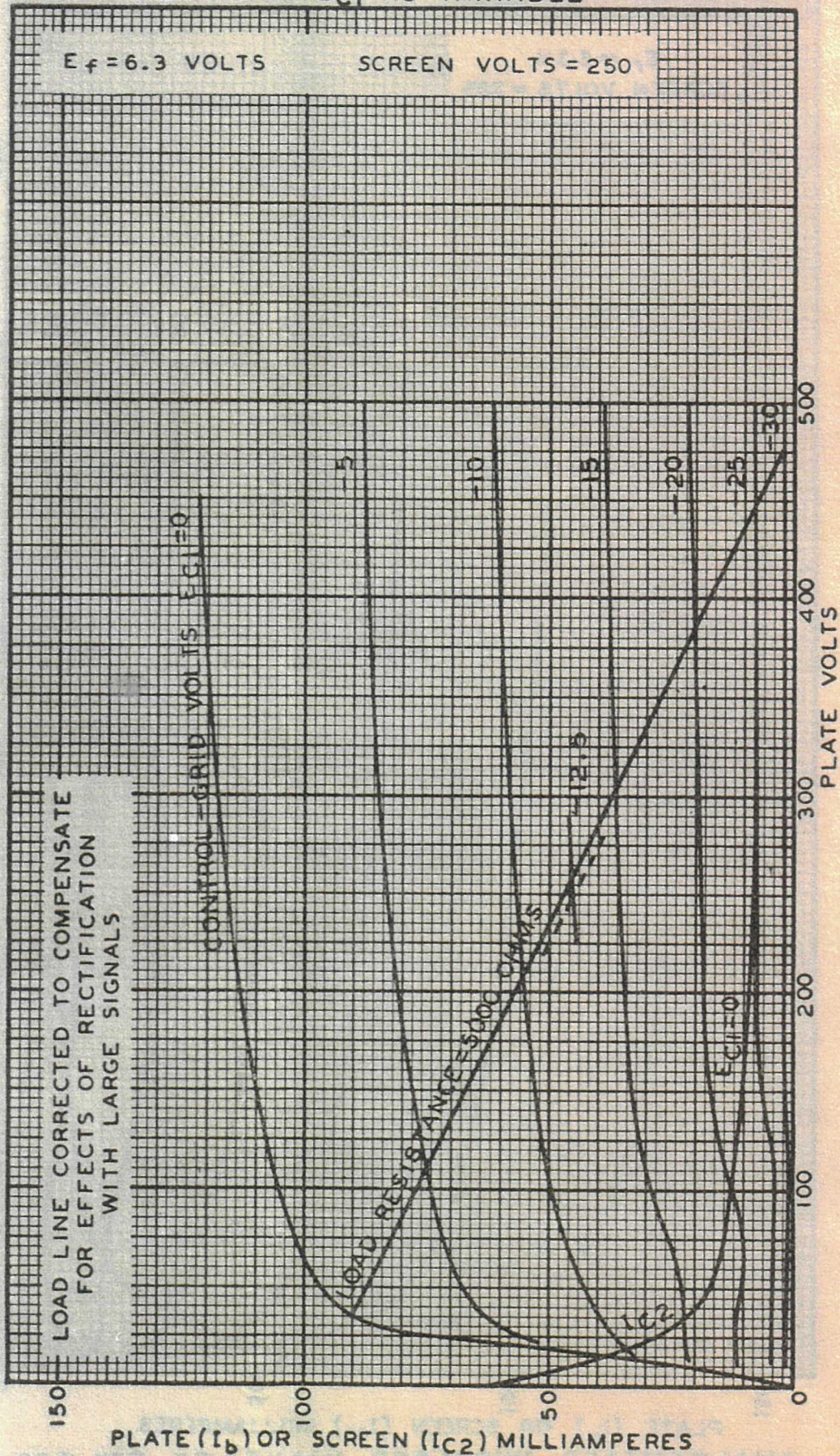


AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
AUGUST 1941  
SYDNEY, AUSTRALIA

# RADIOTRON

## 6V6-G

### AVERAGE PLATE CHARACTERISTICS WITH $E_{C1}$ AS VARIABLE



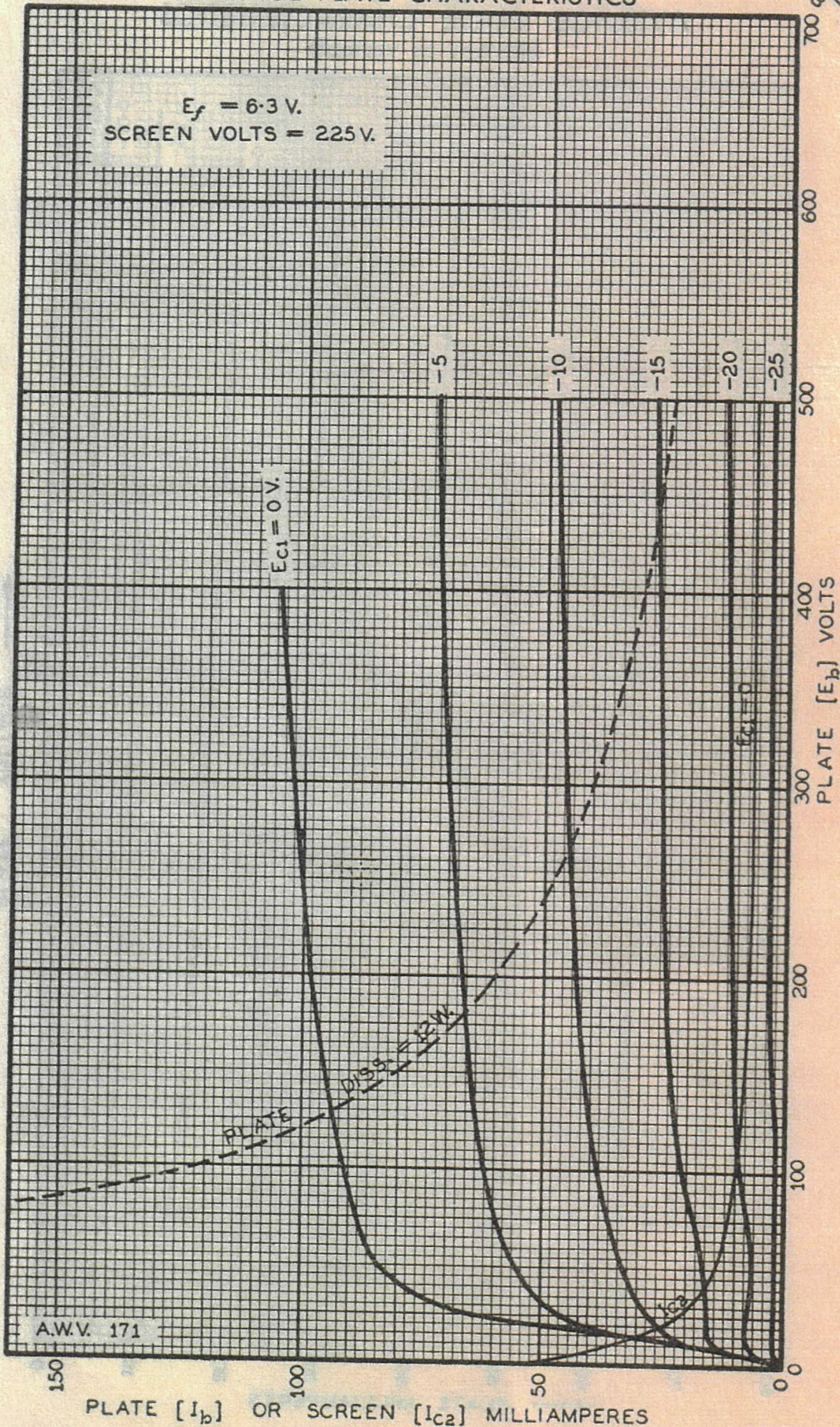
92C-4807

# RADIOTRON

6V6-G

## AVERAGE PLATE CHARACTERISTICS

6V6-G  
SHEET 3



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
AUGUST 1941  
SYDNEY, AUSTRALIA

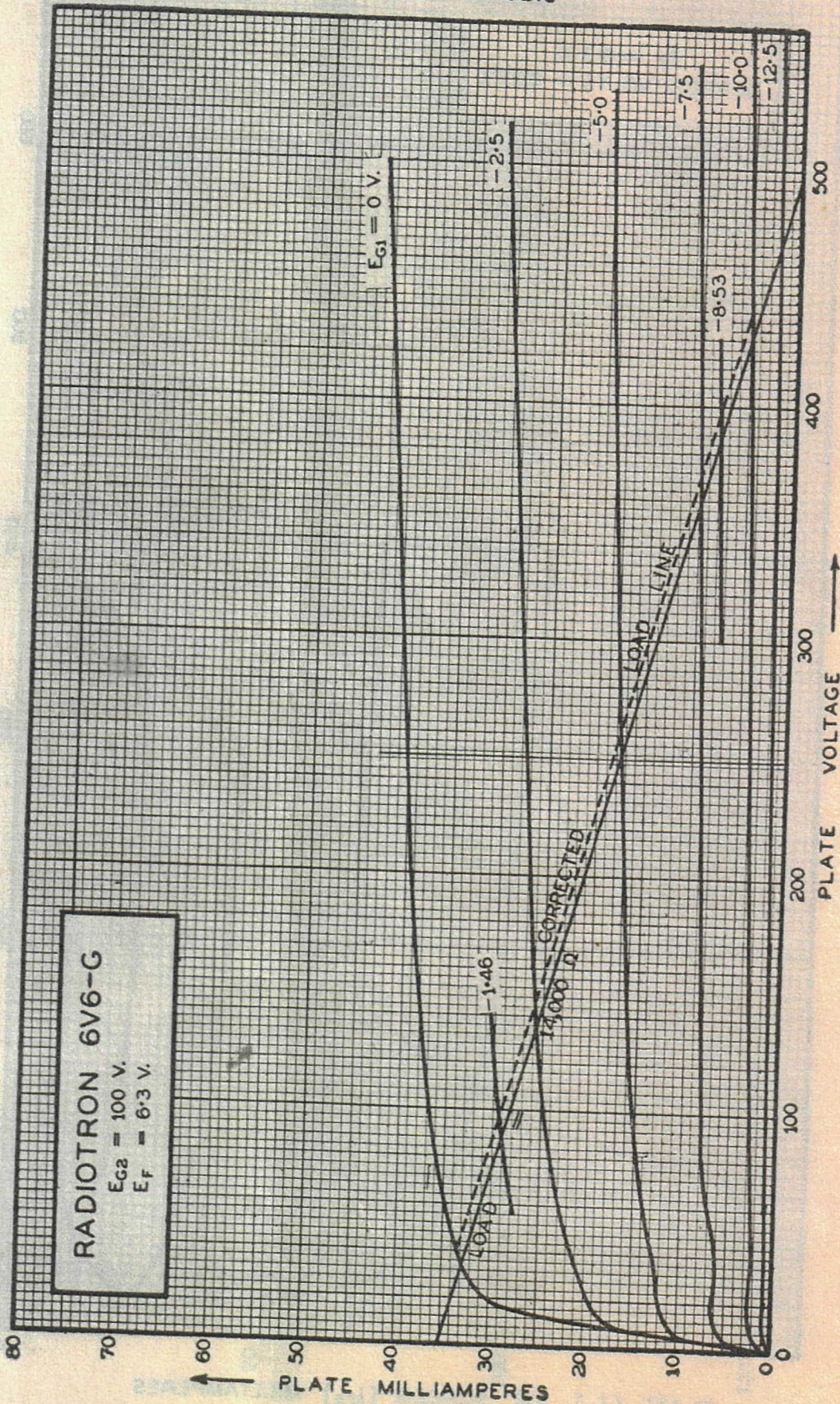
6V6-G

# RADIOTRON

6V6-G

## AVERAGE PLATE CHARACTERISTICS

with  $E_{c1}$  as variable

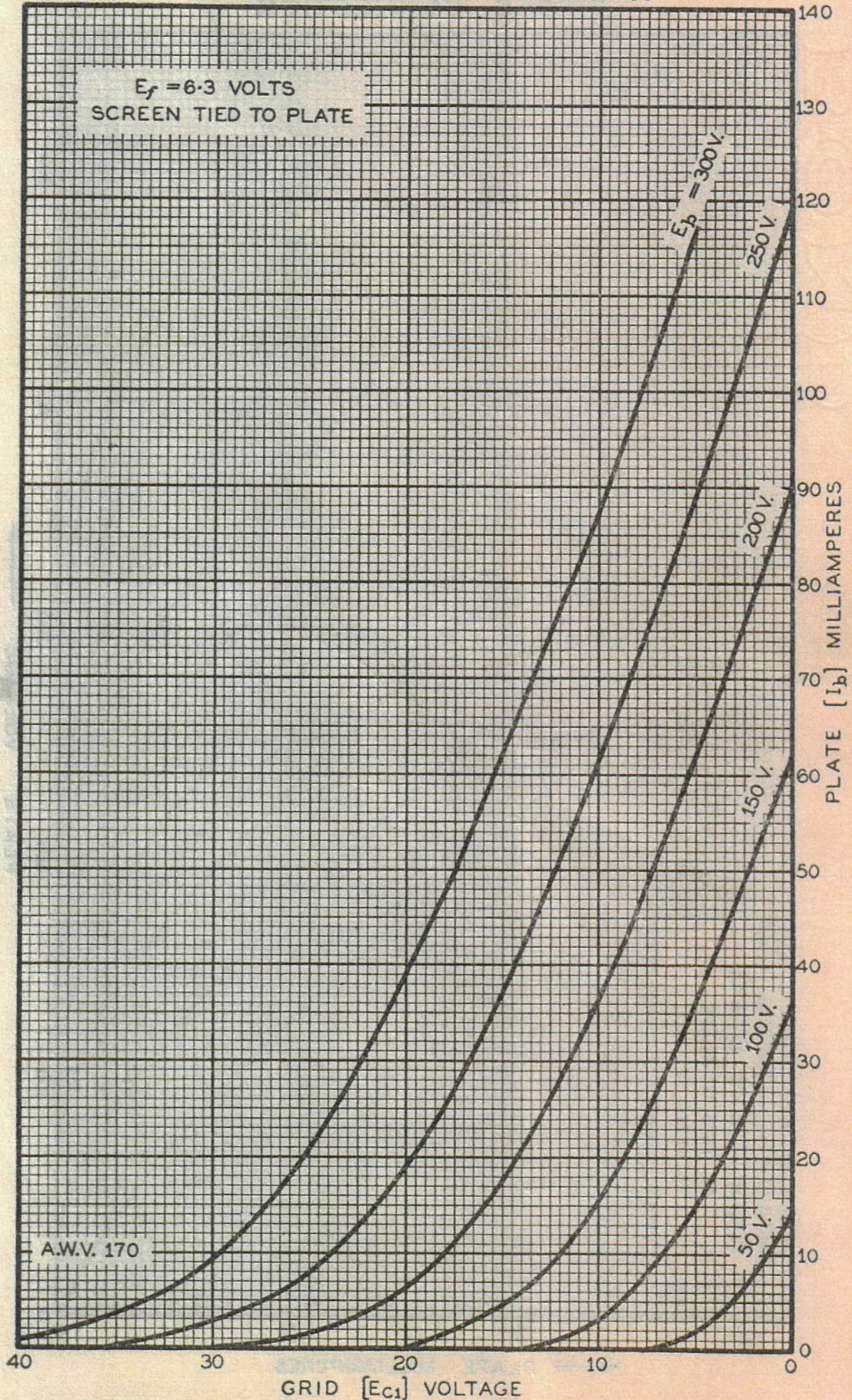


# RADIOTRON

6V6-G

## TRIODE MUTUAL CHARACTERISTICS

6V6-G  
SHEET 4



AMALGAMATED  
AUGUST 1941

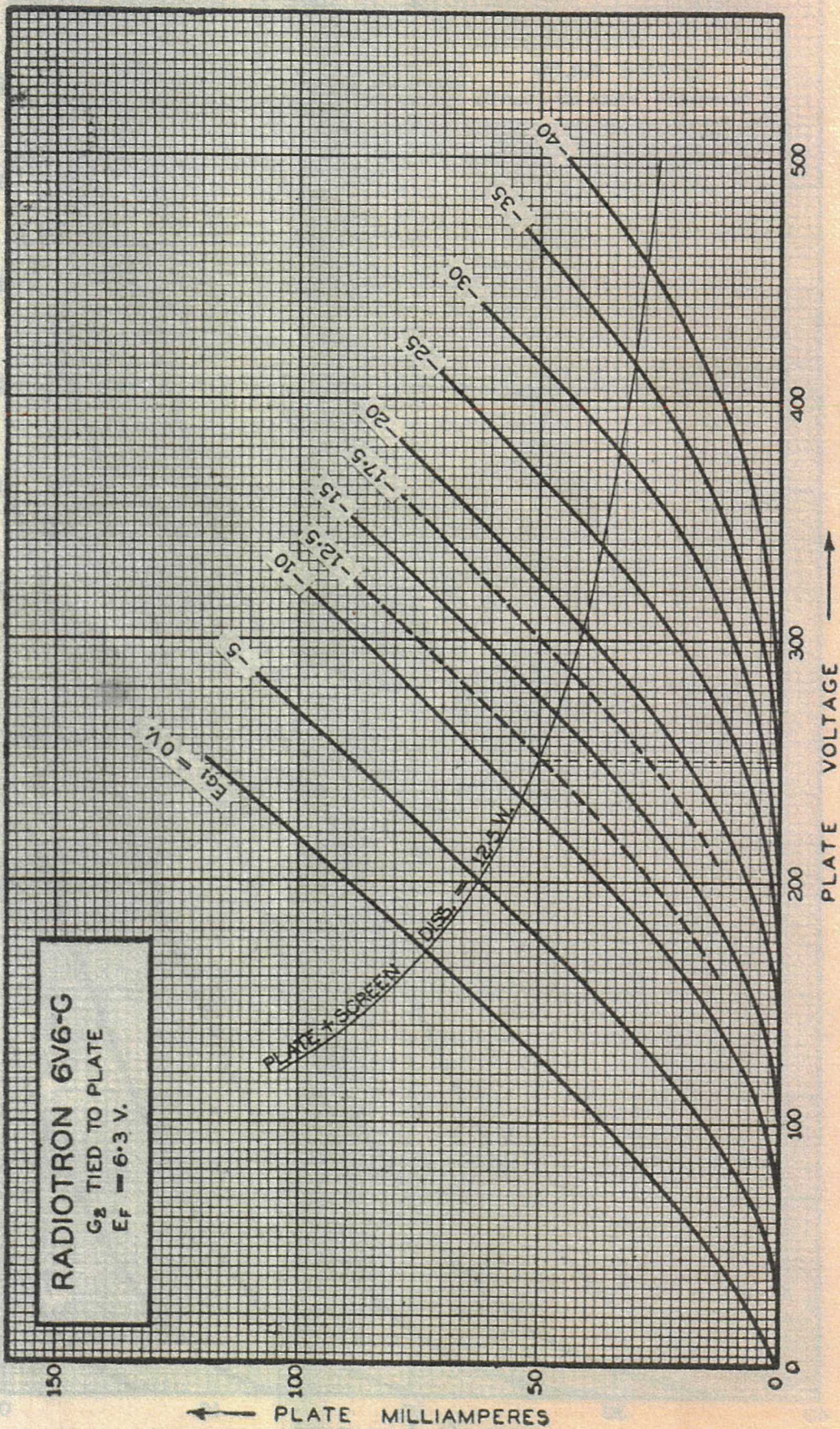
WIRELESS VALVE CO. PTY. LTD.  
SYDNEY, AUSTRALIA

6V6-G

# RADIOTRON

6V6-G

AVERAGE PLATE CHARACTERISTICS  
TRIODE CONNECTION



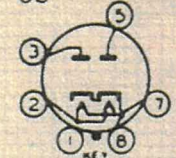
# RADIOTRON

6X5, 6X5-G, 6X5-GT

12/10/46  
6X5-G  
6X5-GT

## FULL-WAVE HIGH-VACUUM RECTIFIER

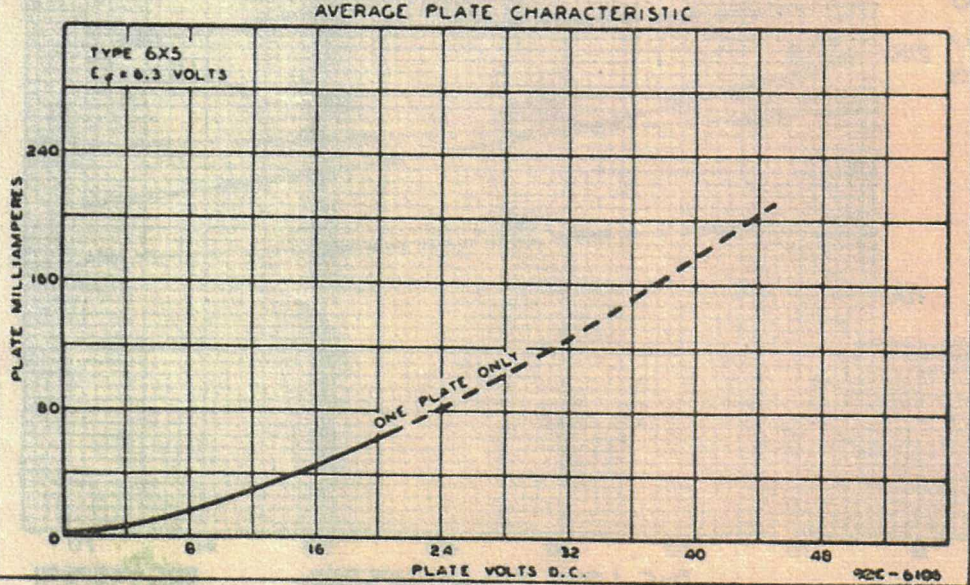
Heater Voltage Current	Coated Unipotential Cathode		
	6X5 6.3 0.6	6X5-G	6X5-GT a-c or d-c volts amp.
Max. Overall Length	3-1/4"	4-1/8"	3-5/16"
Max. Seated Height	2-11/16"	3-9/16"	2-3/4"
Max. Diameter	1-5/16"	1-9/16"	1-5/16"
Bulb	Metal Shell, MT-8	ST-12	T-9
Base	{ Small Wafer Octal 6-Pin	Small Shell Octal 6-Pin	Intermed. Sh. Octal 6-Pin
Basing Designation	6S	G-6S	G-6S
Pin 1	{ 6X5, Shell 6X5-G, No Con. 6X5-GT, No Con.		Pin 3 - Plate #2 Pin 5 - Plate #1
Pin 2 - Heater			Pin 7 - Heater Pin 8 - Cathode
Mounting Position			{ 6X5: Vertical ◊ 6X5-G, 6X5-GT: Any



### FULL-WAVE RECTIFIER

Peak Inverse Voltage	1250 max. volts
Peak Plate Current per Plate	210 max. ma.
D-C Heater-Cathode Potential	450 max. volts
<i>With Condenser-Input Filter:</i>	
A-C Plate Voltage per Plate (RMS)	325 max. volts
Total Effective Plate-Supply Impedance per Plate ▲	150 min. ohms
D-C Output Current	70 max. ma.
<i>With Choke-Input Filter:</i>	
A-C Plate Voltage per Plate (RMS)	450 max. volts
Input-Choke Inductance	8 min. henries
D-C Output Current	70 max. ma.

- Under no condition of operation should the heater voltage fluctuate to exceed 7.5 volts.
  - ◊ Horizontal operation permitted if pins 3 & 5 are in a horizontal plane.
  - ▲ When a filter-input condenser larger than 40 µf is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.
- ← Indicates a change.



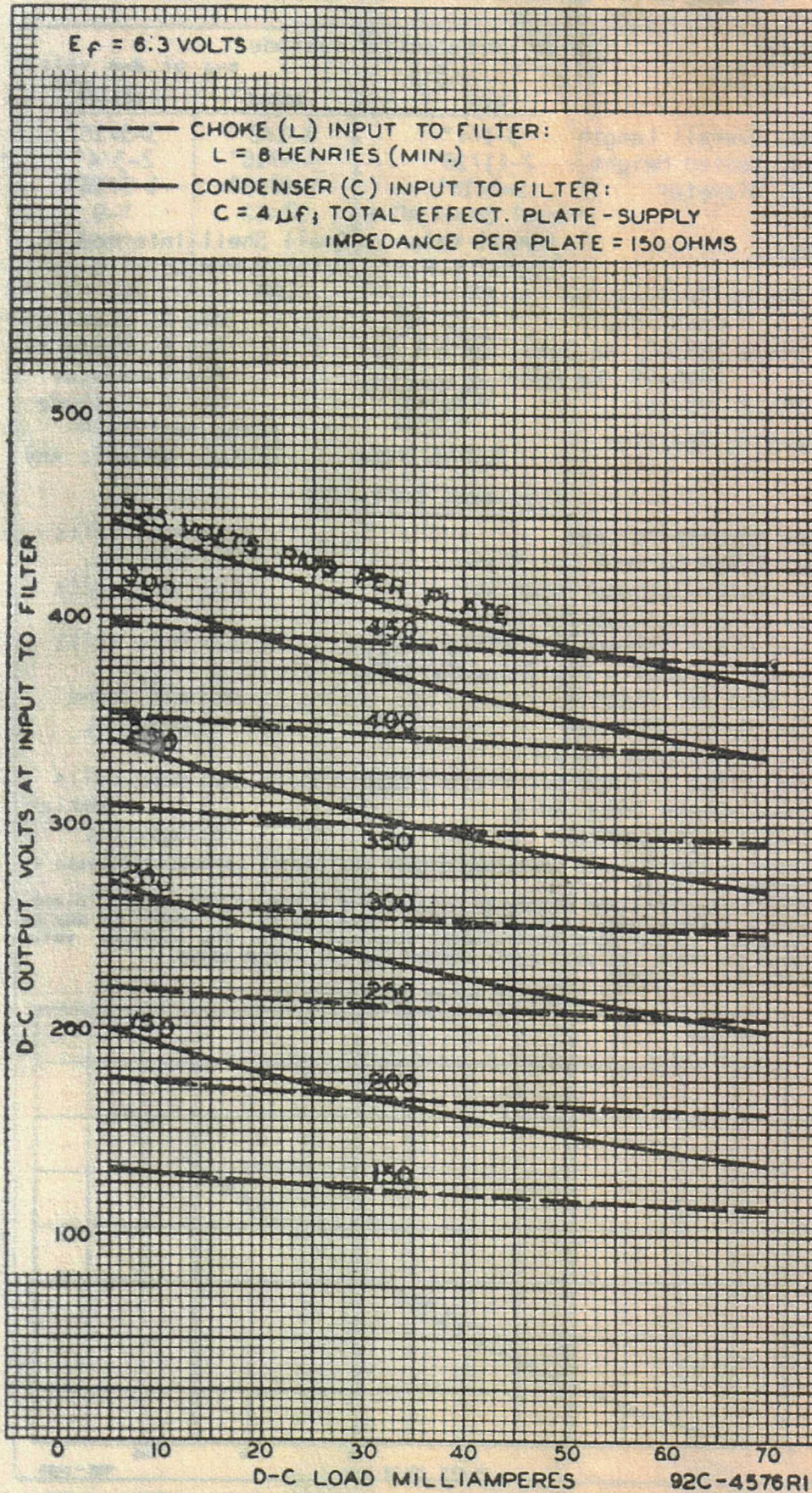
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
SEPTEMBER, 1940  
SYDNEY, AUSTRALIA

6X5-GT

# RADIOTRON

## 6X5-GT

### OPERATION CHARACTERISTICS



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
SEPTEMBER, 1940

92C-4576R1

SYDNEY, AUSTRALIA

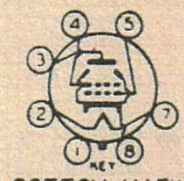
# RADIOTRON

## 25L6, 25L6-G, 25L6-GT

### BEAM POWER AMPLIFIER

12/16  
157-  
★  
25L6-G  
25L6-GT

Heater <sup>■</sup>		Coated Unipotential Cathode		
Voltage	25	a-c or d-c volts		
Current	0.3	amp.		
	25L6	25L6-G	25L6-GT	
Max. Overall Length	3-1/4"	4-5/8"	3-5/16"	
Maximum Diam.	1-5/16"	1-13/16"	1-5/16"	
Bulb	Metal Shell, MT-8		ST-14	T-9
Base	{ Small Wafer Octal 7-Pin		{ Medium Shell Octal 7-Pin	Intermed. Sh. Octal 7-Pin
Basing Designation	7AC		G-7AC	G-7AC
Pin 1	{ 25L6, Shell 25L6-G, No Con. 25L6-GT, No Con.		Pin 4 - Screen	
Pin 2 - Heater			Pin 5 - Grid	
Pin 3 - Plate			Pin 7 - Heater	
Mounting Position			Pin 8 - Cathode	Any



BOTTOM VIEW

#### AMPLIFIER - Class A<sub>1</sub>

Plate Voltage		117 max. volts
Screen Voltage		117 max. volts
Plate Dissipation		5.4 max. watts
Screen Dissipation		1.25 max. watts
Typical Operation:		
Plate Voltage	110	110 volts
Screen Voltage	110	110 volts
Grid Voltage <sup>□</sup>	-7.5	-7.5 volts
Peak A-F Grid Voltage	7.5	7.5 volts
Zero-Sig. Plate Cur.	49	ma.
Max.-Sig. Plate Cur.	54	ma.
Zero-Sig. Screen Cur.	4	ma.
Max.-Sig. Screen Cur.	9	ma.
Plate Resistance (approx.)	10000	10000 ohms
Transconductance	8200	8200 μmhos
Load Resistance	1500	2000 ohms
Tot. Harmonic Distortion	11	10 %
Second Harmonic Distortion	10	3.5 %
Third Harmonic Distortion	4	8.5 %
Max.-Sig. Power Output	2.1	2.2 watts

■ Heater-cathode bias should not exceed 90 volts d.c. as measured between the negative heater terminal and cathode.

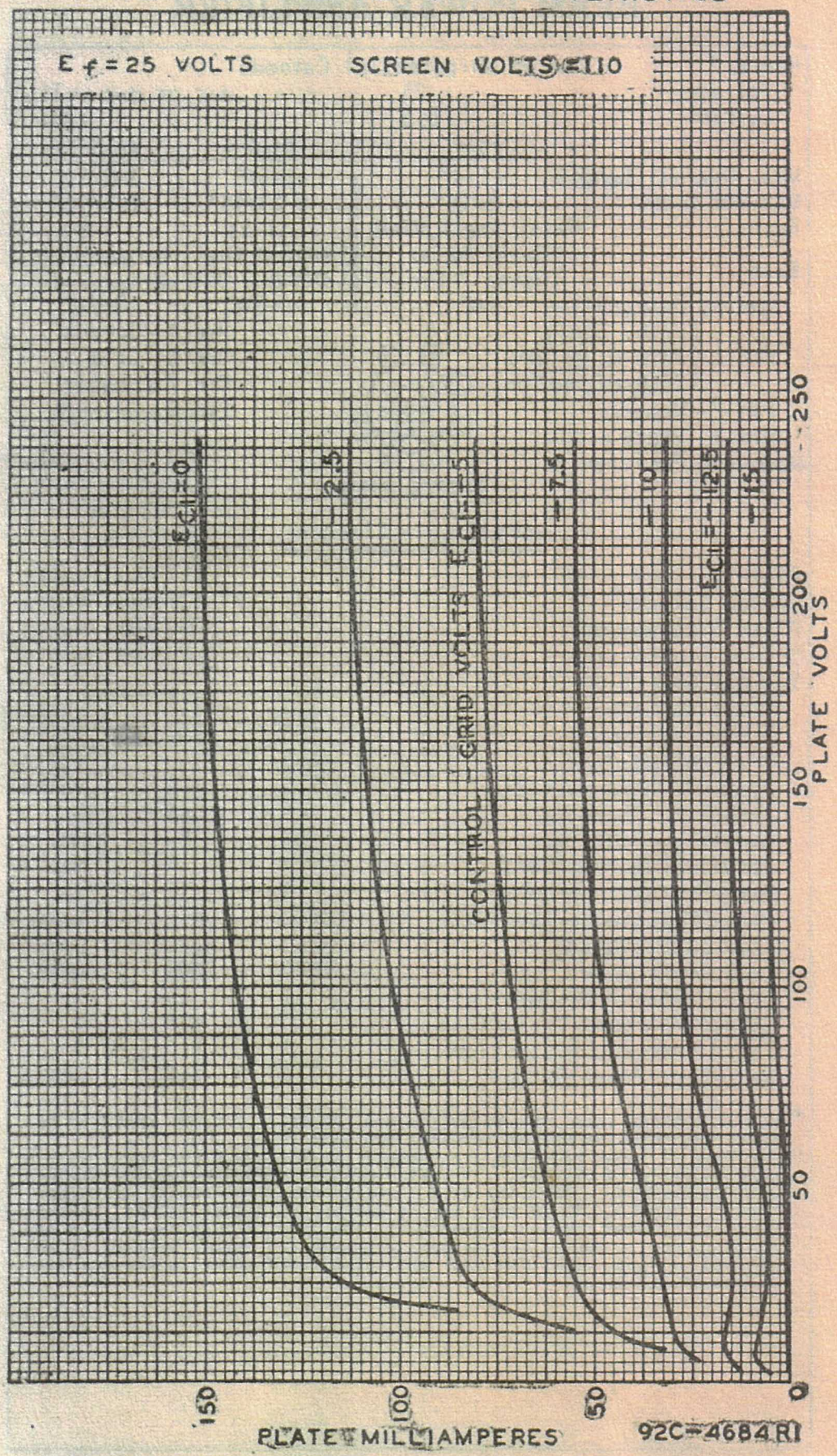
□ The type of input coupling used should not introduce too much resistance in the grid circuit. Transformer- or impedance-coupled devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm, provided the heater voltage is not allowed to rise more than 10% above the rated value under any condition of operation.

25L6

# RADIOTRON

25L6

## AVERAGE PLATE CHARACTERISTICS



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
JULY, 1940  
92C-4684R1  
SYDNEY, AUSTRALIA

Superseding Radiotron 25Z6-G data sheet July 1938.

# RADIOTRON

## 25Z6, 25Z6-G, 25Z6-GT HIGH-VACUUM RECTIFIER-DOUBLER

11/6  
9/6  
9/6  
★  
25Z6  
25Z6-G  
25Z6-GT

		Coated Unipotential Cathodes		
Heater Voltage		25	a-c or d-c volts	
Current		0.3	amp.	
		25Z6	25Z6-G	25Z6-GT
Max. Overall Length		3-1/4"	4-1/8"	3-5/16"
Max. Diameter		1-5/16"	1-9/16"	1-5/16"
Bulb		Metal Shell, MT-8	ST-12	T-9
Base		{Small Wafer Octal 7-Pin	{Small Shell Octal 7-Pin	{Intermed. Shell Octal 7-Pin
Basing Designation		7Q	G-7Q	G-7Q
Pin 1	{ 25Z6, Shell 25Z6-G, No Con. 25Z6-GT, No Con.			Pin 4 - Cathode #2
Pin 2	- Heater			Pin 5 - Plate #1
Pin 3	- Plate #2			Pin 7 - Heater
Pin 8	- Cathode #1			
Mounting Position		Any		

BOTTOM VIEW

RECTIFIER OR DOUBLER

Peak Inverse Voltage	700 max. volts
Peak Plate Current per Plate	450 max. ma.
D-C Heater-Cathode Potential	350 max. volts

*Typical Operation as Half-Wave Rectifier:\**

A-C Plate Volt. per Plate (RMS)	117	150	235 max. volts
Total Effec. Plate-Supply Impedance per Plate <sup>▲</sup>	0 min.	40 min.	100 min. ohms
D-C Output Cur. per Plate	75 max.	75 max.	75 max. ma.

*Typical Operation as Voltage Doubler:*

	Half-Wave	Full-Wave
A-C Plate Volt. per Plate (RMS)	117 max.	117 max. volts
Total Effective Plate-Supply Impedance <sup>▲</sup>	30 min.	0 min. ohms
D-C Output Current	75 max.	75 max. ma.

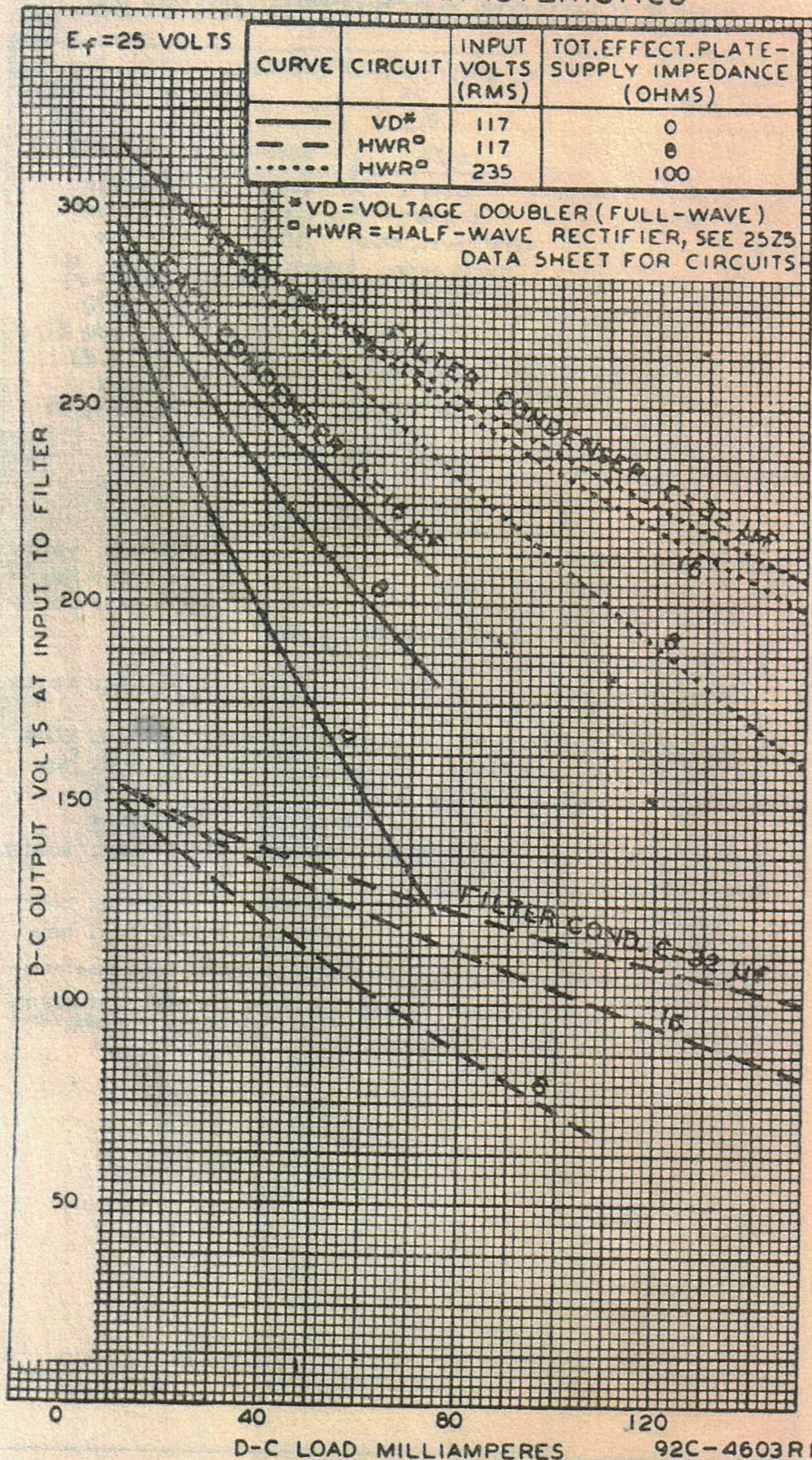
\* In half-wave rectifier service, the two units may be used separately or in parallel.  
 ▲ When a filter-input condenser larger than 40 μf is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

25Z6

# RADIOTRON

25Z6

## OPERATION CHARACTERISTICS



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

JULY, 1940

SYDNEY, AUSTRALIA

## RADIOTRON

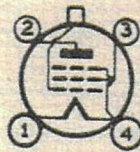
34

34  
SHEET 1

## SUPER-CONTROL R. F. AMPLIFIER PENTODE

In almost all cases type 34 may be directly replaced by type 1A4-P without change to the equipment. The two types are almost identical except that the overall dimensions of type 1A4-P are smaller than those of type 34.

Filament	Coated		
Voltage	2.0		d-c volts
Current	.06		amp.
Direct Interelectrode Capacitances:			
Grid to Plate <sup>ⓐ</sup>	0.015 max.		$\mu\text{pF}$
Input	6.0		$\mu\text{pF}$
Output	11.5		$\mu\text{pF}$
Maximum Overall Length			5-1/32"
Maximum Diameter			1-13/16"
Bulb			ST-14
Cap			Small Metal
Base			Medium 4-Pin
Pin 1-Filament +			Pin 4-Filament -
Pin 2-Plate			Cap -Grid
Pin 3-Screen			



BOTTOM VIEW

## CLASS A AMPLIFIER

Operating Conditions and Characteristics:

Filament Voltage	2.0	2.0	2.0	d-c volts
Plate Voltage	67.5	135	180 max.	volts
Screen Voltage	67.5	67.5	67.5	max. volts
Grid Voltage <sup>ⓐ</sup>	-3.0	-3.0	-3.0	min. volts
Plate Res.	0.4	0.6	1.0	megohm
Transcond.	560	600	620	$\mu\text{mhos}$
Transcond.*	15	15	15	$\mu\text{mhos}$
Plate Current	2.7	2.8	2.8	mA.
Screen Current	1.1	1.0	1.0	mA.

## MIXER (In Superhet. Receivers)

Operating Conditions with Variable Bias:

Filament	2.0	2.0	2.0	d-c volts
Plate Voltage	67.5	135	180 max.	volts
Screen Voltage	67.5	67.5	67.5	max. volts
Grid Voltage**	-5.0	-5.0	-5.0	approx. volts

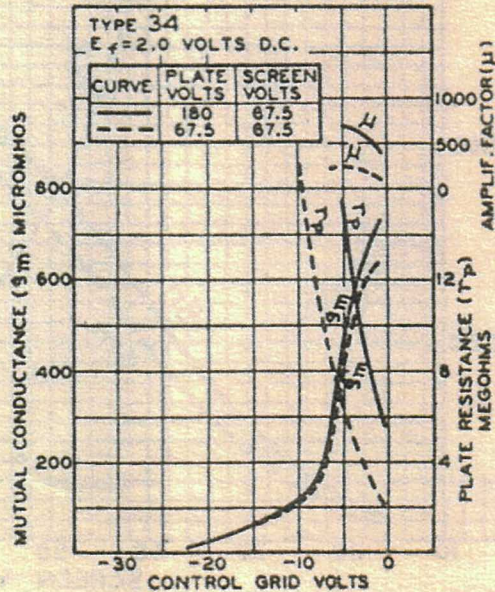
<sup>ⓐ</sup> With shield-can connected to negative filament terminal.

\*\* The grid voltage shown is minimum for an oscillator peak voltage of 4.0 volts. These values are optimum.

\* At a grid bias of -22.5 volts.

• Negative filament return. The grid circuit resistance should not exceed 3 megohms for a single controlled stage, 2.5 megohms for two controlled stages, or 3 megohms for three controlled stages.

## AVERAGE CHARACTERISTICS



925-5385

AMALGAMATED WIRELESS VALVE CO. PTY. LTD

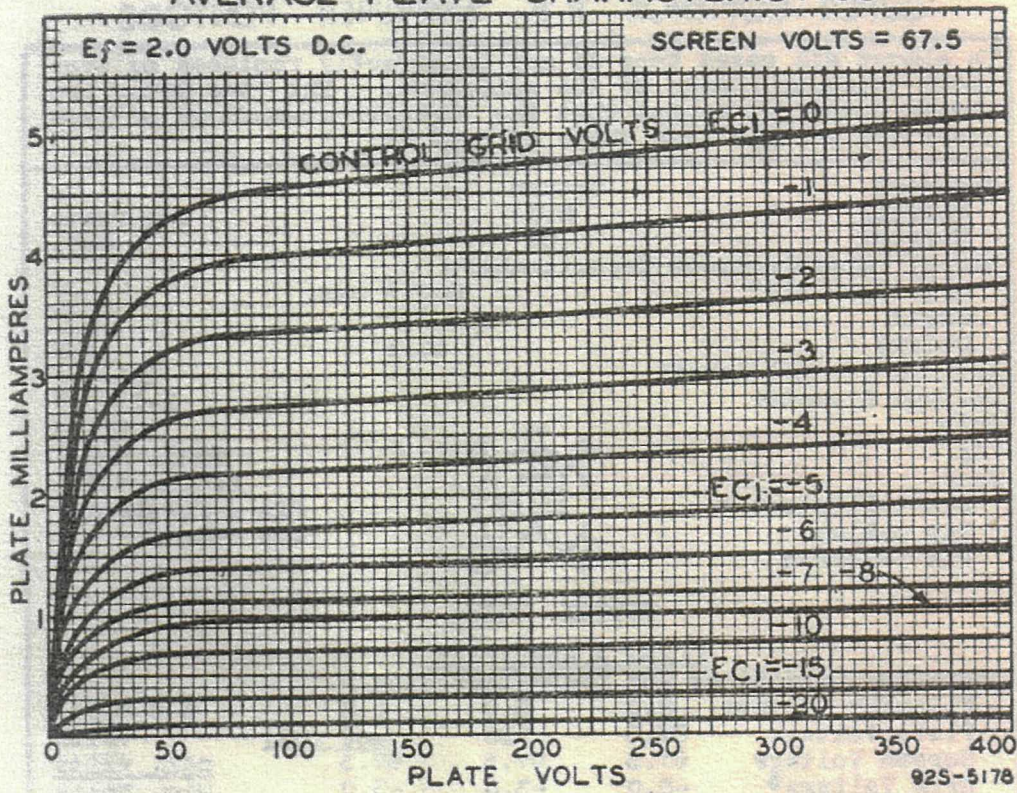
JULY 1941

SYDNEY, AUSTRALIA

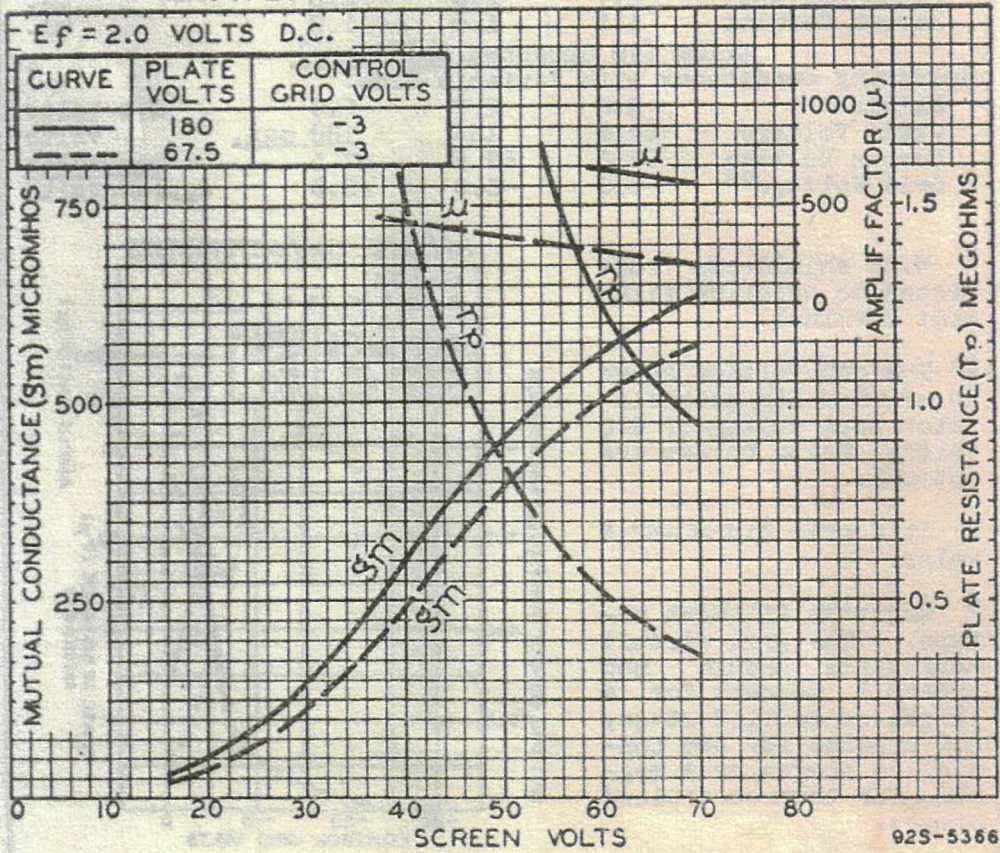
# RADIOTRON

34

## AVERAGE PLATE CHARACTERISTICS



## AVERAGE CHARACTERISTICS



92C-4473

# RADIOTRON

35

SHEET 1  
35

## SUPER-CONTROL SCREEN GRID R.F. AMPLIFIER

Heater\* Coated Unipotential Cathode  
 Voltage 2.5 a-c or d-c volts  
 Current 1.75 amp.

Direct Interelectrode Capacitances:  
 Grid to Plate<sup>o</sup> 0.007 max.  $\mu\text{F}$   
 Input 5.3  $\mu\text{F}$   
 Output 10.5  $\mu\text{F}$

Maximum Overall Length 5-1/32"

Maximum Diameter 1-13/16"

Bulb ST-14

Cap Small Metal

Base Medium 5-Pin

Pin 1-Heater

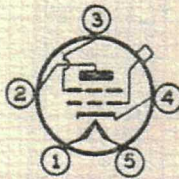
Pin 2-Plate

Pin 3-Screen

Pin 4-Cathode

Pin 5-Heater

Cap -Grid



BOTTOM VIEW

### CLASS A AMPLIFIER

#### Operating Conditions and Characteristics:

Heater*	2.5	2.5		volts
Plate	180	250	275 max.	volts
Screen	90	90		max. volts
Grid <sup>o</sup>	-3	-3		min. volts
Plate Res.	0.3	0.4		megohm
Transcond.	1020	1050		$\mu\text{mhos}$
Transcond.#	15	15		$\mu\text{mhos}$
Plate Current	6.3	6.5		mA.
Screen Current	2.5	2.5		mA.

#### MIXER (In Superhet. Receivers)

#### Operating Conditions With Variable Bias:

Heater*	2.5			volts
Plate	250	275 max.		volts
Screen	90			max. volts
Grid**	-7			approx. volts

\* With shield-can connected to cathode

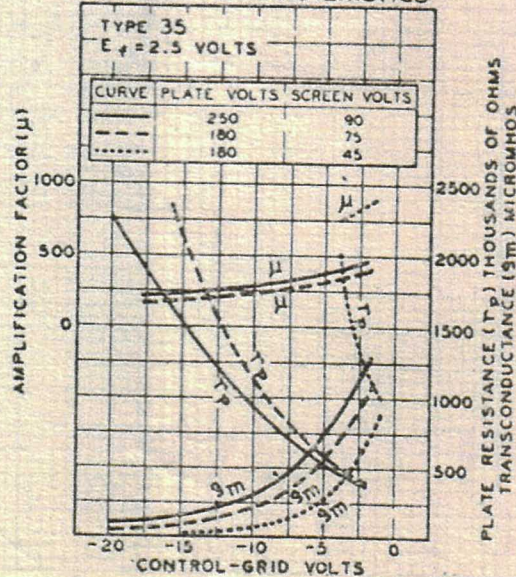
\* In circuits where the cathode is not directly connected to heater, the potential difference between heater and cathode should be kept as low as possible.

o The d-c resistance in the grid circuit should not exceed 3 megohms.

# At -40 volts bias.

\*\* The grid bias is minimum for an oscillator peak voltage of 6.0 volts. These values are optimum.

#### AVERAGE CHARACTERISTICS



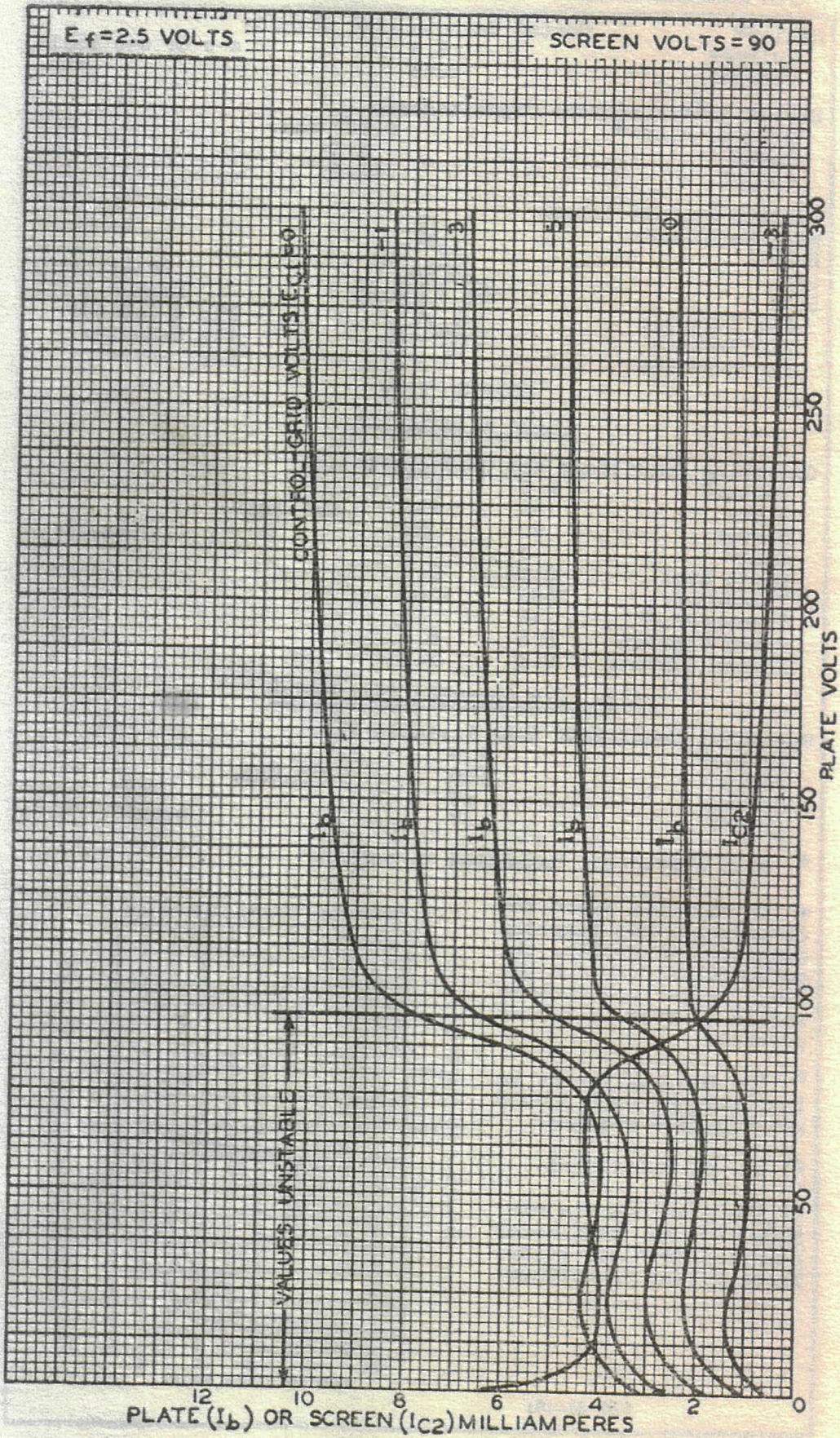
92C-5141R1

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# RADIOTRON

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## AVERAGE PLATE CHARACTERISTICS



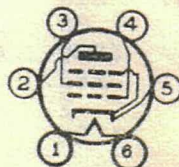
92S-5131R1

## RADIOTRON

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## POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode		
Voltage	6.3		a-c or d-c volts
Current	0.7		amp.
Maximum Overall Length			4-11/16"
Maximum Seated Height			4-1/16"
Maximum Diameter			1-13/16"
Bulb			ST-14
Base			Medium 6-Pin
Pin 1-Heater			Pin 4-Grid
Pin 2-Plate			Pin 5-Cathode
Pin 3-Screen			Pin 6-Heater



BOTTOM VIEW (6B)

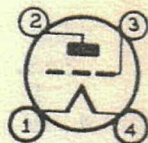
For additional data and curves, refer to type 6F6-G.

## RADIOTRON

45

## POWER AMPLIFIER TRIODE

Filament	Coated		
Voltage	2.5		a-c or d-c volts
Current	1.5		amp.
Direct Interelectrode Capacitances:			
Grid to Plate	7.0		$\mu\mu\text{F}$
Grid to Filament	4.0		$\mu\mu\text{F}$
Plate to Filament	3.0		$\mu\mu\text{F}$
Maximum Overall Length			4-11/16"
Maximum Seated Height			4-1/16"
Maximum Diameter			1-13/16"
Bulb			ST-14
Base			Medium 4-Pin
Pin 1-Filament			Pin 3-Grid
Pin 2-Plate			Pin 4-Filament
Mounting Position			Vertical, Base Down



BOTTOM VIEW (4D)

SINGLE VALVE AMPLIFIER-Class A1

Plate Voltage				300 max. volts
Plate Dissipation				10 max. watts
Typical Operation:				
Filament Voltage	2.5	2.5	2.5	a-c volts
Zero-Sig. Plate Voltage	180	250	275	volts
Zero-Sig. Grid Volts*	-31.5	-50	-56	volts
Zero-Sig. Cath. Bias Res.	1020	1470	1550	ohms
Zero-Sig. Plate Cur.	31	34	36	mA.
Amplification Factor	3.5	3.5	3.5	
Plate Resistance	1650	1610	1700	ohms
Transconductance	2125	2175	2050	$\mu\text{mhos}$
Load Resistance	2700	3900	4600	ohms
Dominant Harmonic	2nd.	2nd.	2nd.	
Total Harm. Dist.	5	5	5	%
Max. Sig. Pwr. Output	.825	1.6	2.0	watts

PUSH-PULL AMPLIFIER-Class A1

Plate Voltage	300 max. volts
Plate Dissipation (per valve)	10 max. watts

42  
45  
SHEET 1

# RADIOTRON

45

## POWER AMPLIFIER TRIODE

### Typical Operation:

Filament Voltage	2.5	2.5	2.5	a-c volts
Zero-Sig. Plate Voltage	180	250	275	volts
Zero-Sig. Grid Volts <sup>★</sup>	-31.5	-50	-56	volts
Zero-Sig. Cath. Bias Res. <sup>++</sup>	510	735	775	ohms
Zero-Sig. Plate Cur. <sup>++</sup>	62	68	72	mA.
Load Resistance (P-P)	3200	4200	3900	ohms
Dominant Harmonic	3rd.	3rd.	3rd.	
Total Harm. Dist.	2	1	1	approx. %
Max. Sig. Pwr. Output <sup>++</sup>	1.85	4.6	5.5	watts

### PUSH-PULL AMPLIFIER-Class AB<sub>1</sub>

Plate Voltage	300 max. volts
Plate Dissipation (per valve)	10 max. watts

### Typical Operation. . . . . Fixed Bias:

Filament Voltage	2.5	2.5	2.5	a-c volts
Plate Voltage	250	275	300	volts
Grid Voltage <sup>★</sup>	-56.5	-69.5	-71.5	volts
Peak A-F Volts (G-G)	110	136	140	volts
Zero-Sig. Plate Cur. <sup>++</sup>	38	28	40	mA.
Max.-Sig. Plate Cur. <sup>++</sup>	68	82	81.2	mA.
Plate Supply Res.	0	0	0	ohms
Load Resistance (P-P)	3900	4000	3850	ohms
Dominant Harmonic	3rd.	3rd.	3rd.	
Total Harm. Dist.	2	2	1	approx. %
Max. Sig. Pwr. Output <sup>++</sup>	4.85	6.0	7.5	watts

### Typical Operation. . . . . Self Bias:

Filament	2.5	2.5	2.5	a-c volts
Plate Voltage	250	275	300	volts
Cathode Resistor <sup>++</sup>	830	850	1000	ohms
Peak A-F Volts (G-G) <sup>★</sup>	110	136	140	volts
Zero-Sig. Plate Cur. <sup>++</sup>	61	67	64.5	mA.
Max.-Sig. Plate Cur. <sup>++</sup>	68	82	72	mA.
Plate Supply Res.	0	0	0	ohms
Load Res. (P-P)	3900	4000	5000	ohms
Dominant Harmonic	3rd.	3rd.	3rd.	
Total Harm. Dist.	2	2	1	approx. %
Max. Sig. Pwr. Output <sup>++</sup>	4.85	6.0	7.4	watts

### PUSH-PULL AMPLIFIER-Class AB<sub>2</sub>

Plate Voltage	300 max. volts
Plate Dissipation (per valve)	10 max. watts

### Typical Operation. . . . . Fixed Bias:

Filament Voltage	2.5	2.5	2.5	a-c volts
Plate Voltage	275	275	275	volts
Grid Voltage <sup>★</sup>	-56	-68	-76	volts
Peak A-F Volts (G-G)	183	195	239	volts
Peak Grid Current	5.3	6.73	8.36	mA.
D-C Grid Current <sup>++</sup>	2.5	2.74	4.0	mA.
Grid Input Peak Pwr.	486	656	1000	mW.
Plate Supply Res.	0	0	0	ohms
Zero-Sig. Plate Cur. <sup>++</sup>	72	28	10	mA.
Max.-Sig. Plate Cur. <sup>++</sup>	133	138	136	mA.
Load Res. (P-P)	3900	3200	3490	ohms
Total Harm. Dist.	5	5	5	%
Max. Sig. Pwr. Output <sup>++</sup>	17	18.2	19.1	watts

### Typical Operation. . . . . Self Bias:

Filament Voltage	2.5	2.5	2.5	a-c volts
Plate Voltage	275	275	275	volts
Cathode Resistor <sup>++</sup>	775	775	775	ohms
Zero-Sig. Grid Volts <sup>★</sup>	-56	-56	-56	volts
Max.-Sig. Grid Volts	-68	-69.5	-75.5	volts

# RADIOTRON

4 5

4 5  
SHEET 2

## POWER AMPLIFIER TRIODE

Peak A-F Volts (G-G)	186.6	210	221.8	volts
Peak Grid Current	5.02	10.6	7.4	mA.
D-C Grid Current <sup>++</sup>	2.66	4.0	3.92	mA.
Grid Input Peak Pwr.	464 <sup>■</sup>	1110 <sup>▲</sup>	820	mW.
Plate Supply Res.	1000	1000	0	ohms
Zero-Sig. Plate Cur. <sup>++</sup>	72	72	72	mA.
Max.-Sig. Plate Cur. <sup>++</sup>	84	86	94	mA.
Max.-Sig. Plate Volts	250	246	256	volts
Load Res. (P-P)	5520	5810	5420	ohms
Total Harm Dist.	5	5	5	%
Max. Sig. Pwr. Output <sup>++</sup>	11.2	12.7	13.2	watts

\* Grid volts measured from mid-point of a-c operated filament

◇ Horizontal operation permitted if plane of filament is vertical.

● A grid return circuit having low d-c resistance is desirable. With self-bias the d-c resistance should not exceed 1.0 megohm; with fixed bias it should not exceed 0.1 megohm.

<sup>++</sup> For both valves.

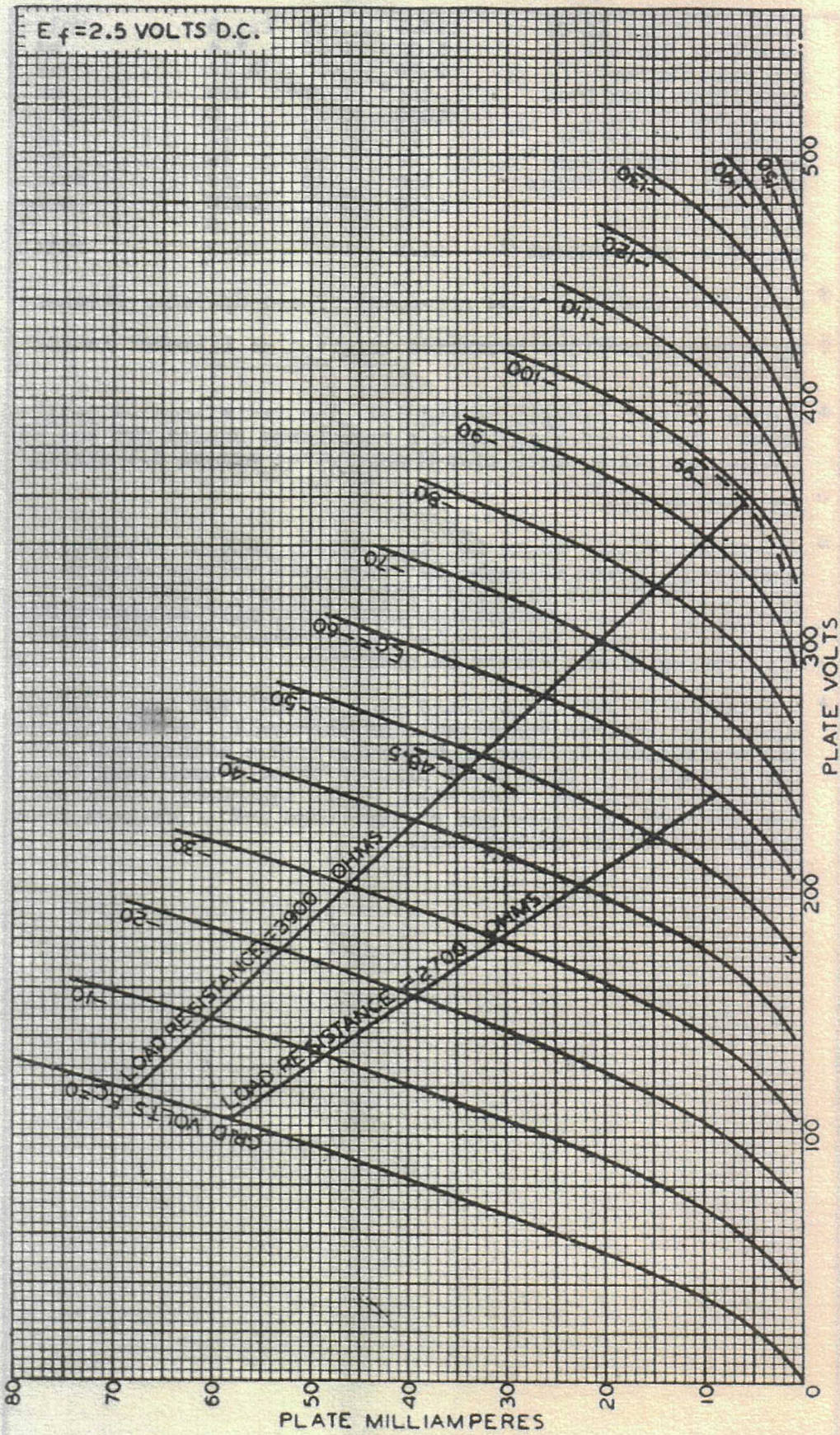
■ A suitable driver would be type 6J7-G, 6C6 or 57 (triode connected), plate voltage 250 volts, grid voltage -8.0 volts with a transformer having a ratio of 1.15:1 primary to half-secondary, primary resistance 1350 ohms, half secondary resistance 925 ohms and core loss not greater than 10%. Cathode loading of the driver is desirable.

▲ A suitable driver stage would consist of two type 6J7-G, 6C6 or 57 (triode connected) in push-pull, plate voltage 250 volts, grid voltage -8.0 volts, with a transformer having a ratio of 2.04:1 total primary to half secondary, total primary resistance 2480 ohms, half secondary resistance 620 ohms and core loss not greater than 10%. Cathode loading of the driver is desirable.

# RADIOTRON

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## AVERAGE PLATE CHARACTERISTICS



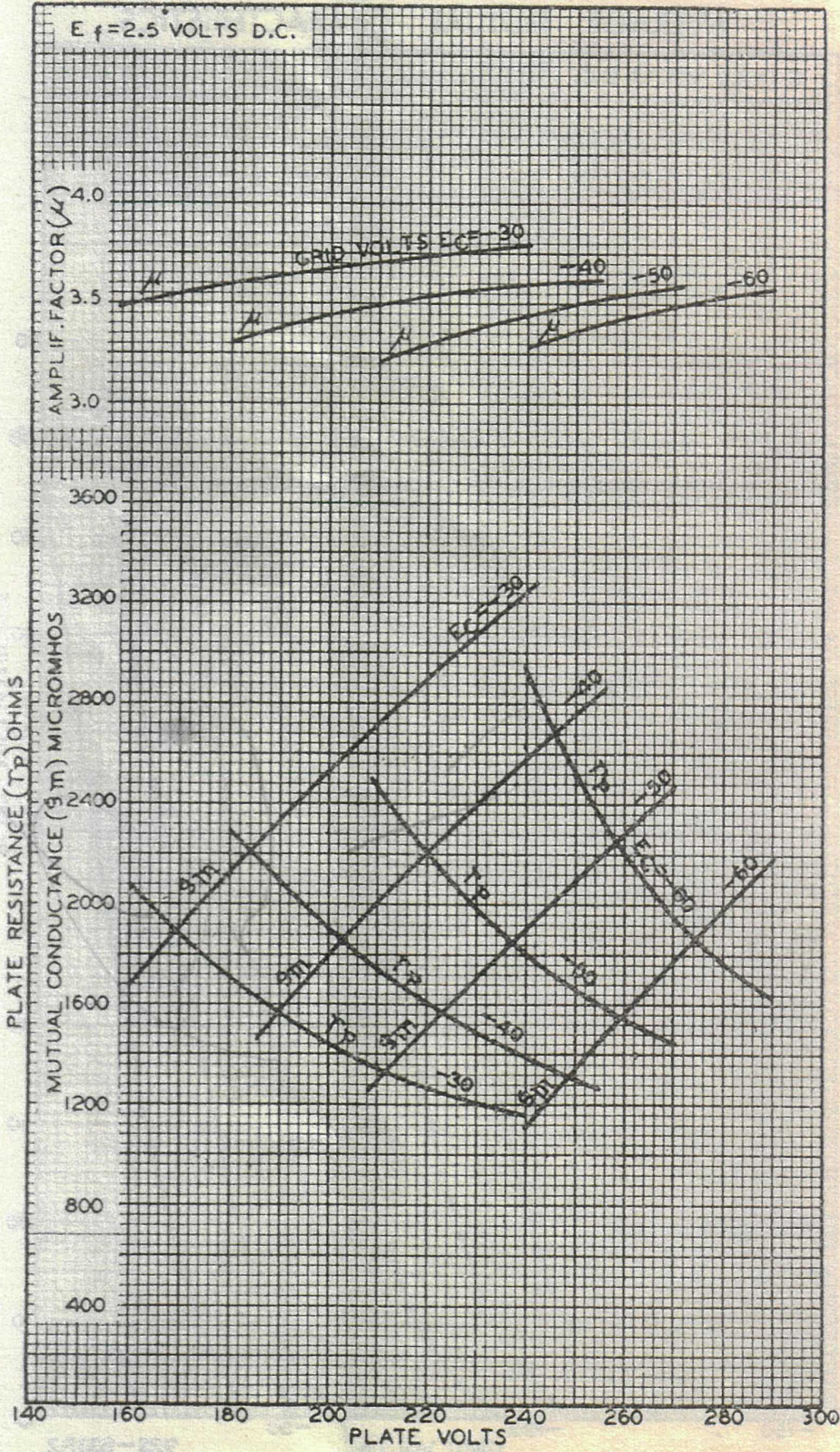
925-506R2



# RADIOTRON

45

## AVERAGE CHARACTERISTICS



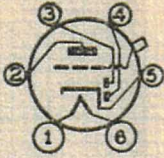
# RADIOTRON

85

SHEET 1

## DUPLEX-DIODE TRIODE

The electrical characteristics of type 6B8-G, when connected as a triode, are almost identical to those of type 85 and a triode-connected 6B8-G may be used to replace type 85 without change in the electrical circuit. Type 6B8-G requires an octal socket (as compared with a 6-pin socket for type 85) pins 3 and 4 tied together forming the plate connection.

Heater	Coated Unipotential Cathode		
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
Direct Interelectrode Capacitances - Triode Unit			
Grid to Plate	1.5	μmf	
Grid to Cathode	1.5	μmf	
Plate to Cathode	4.3	μmf	
Maximum Overall Length	4-17/32"		
Maximum Diameter	1-9/16"		
Bulb	ST-12		
Cap	Small Metal		
Base	Small 6-Pin		
Pin 1-Heater			Pin 5-Cathode
Pin 2-Triode Plate			Pin 6-Heater
Pin 3-Diode Plate # 2			Cap -Triode Grid
Pin 4-Diode Plate # 1			
Mounting Position	BOTTOM VIEW	any	

### TRIODE UNIT - Class A Amplifier

#### Operating Conditions and Characteristics:

Heater*	6.3	6.3	6.3	volts
Plate Voltage	135	180	250 max.	volts
Grid Voltage	-10.5	-13.5	-20	volts
Amp. Fact.	8.3	8.3	8.3	
Plate Res.	11000	8500	7500	ohms
Transcond.	750	975	1100	μmhos
Plate Cur.	3.7	6.0	8.0	mA.
Load Res.	25000	20000	20000	ohms
Power Output	75	160	350	mW.

### DIODE UNITS - Two

(For average diode characteristics see under 6B7, 6B7S)

The two diode plates are placed around a cathode the sleeve of which is common to the triode unit. Each diode has its own base pin. Their rectifying or detecting action may be used in half-wave or full-wave arrangement to supply signal voltage to the triode unit and/or voltage to regulate the gain of the r-f or i-f amplifier stages so as to maintain essentially constant-carrier input to the audio detector. The half-wave circuit will provide approximately twice the rectified voltage obtainable from the full-wave circuit.

Regulation of amplifier gain by means of a rectified voltage may be accomplished by a number of methods. The regulating voltage may be applied to the control grids of the amplifier tubes or it may be applied in the case of the r-f pentodes to their suppressors, plates and/or screens.

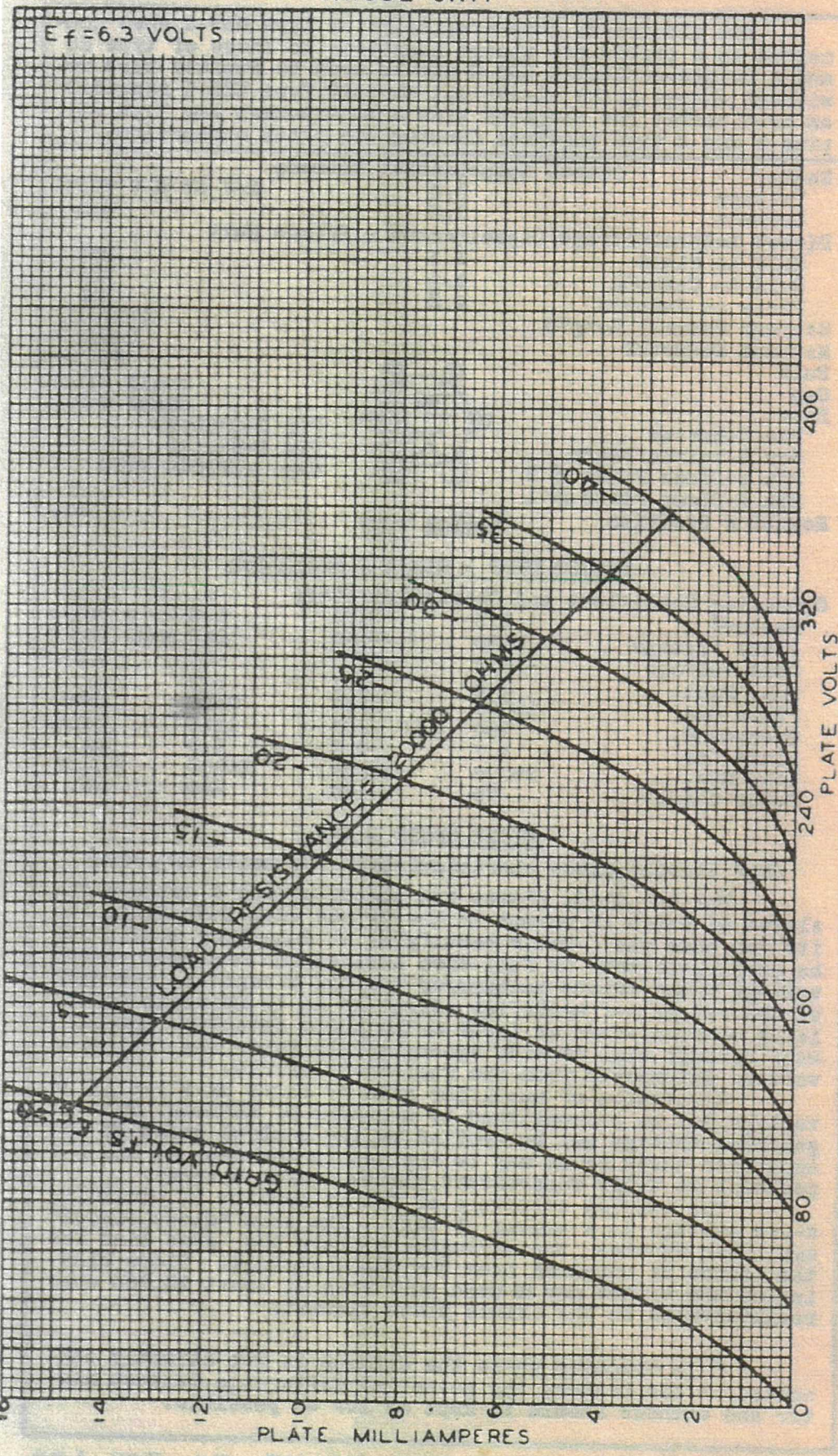
The complex structure of the 85 permits of obtaining a-v-c voltage in a number of ways. The term "diode-biased" amplifier denotes the arrangement where the grid bias for the triode is obtained from the diode circuit. Diode biasing of the triode may be used only when at least 20,000 ohms resistance is in the triode plate circuit.

\* In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.

# RADIOTRON

85

## AVERAGE PLATE CHARACTERISTICS TRIODE UNIT



# RADIOTRON

## 1A7-GT

### PENTAGRID CONVERTER

1A7-GT



Filament *	Coated	
Voltage	1.4	d-c volts
Current	0.05	amp.
<b>Direct Interelectrode Capacitances:</b>		
Grid #4 to Plate	-----	0.40 <sup>▲</sup> μpf
Grid #4 to Grid #2	-----	0.25 <sup>▲</sup> μpf
Grid #4 to Grid #1	-----	0.12 <sup>▲</sup> μpf
Grid #1 to Grid #2	-----	1.5 μpf
Grid #1 to All Other Electrodes (R-F Input)	-----	7.5 μpf
Grid #2 to All Other Electrodes Except Grid #1 (Osc. Output)	-----	4.0 μpf
Grid #1 to All Other Electrodes Except Grid #2 (Osc. Input)	-----	3.2 μpf
Plate to All Other Electrodes (Mixer Output)	-----	10 μpf

Overall Length 3-5/16" max.

Maximum Diameter 1-5/16"

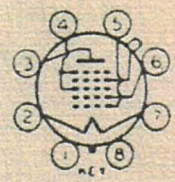
Bulb T-9

Cap Skirted Miniature, Style C

Base Intermediate Shell Octal 8-Pin

- Basing Designation
- Pin 1 - No Connection
- Pin 2 - Filament +
- Pin 3 - Plate
- Pin 4 - Grids #3 & #5
- Pin 5 - Grid #1

- G-7Z
- Pin 6 - Grid #2
- Pin 7 - Filament -
- Pin 8 - No Connection
- Cap - Grid #4



BOTTOM VIEW

#### CONVERTER SERVICE

Plate Voltage	90 max.	volts
Screen (Grids #3 & #5) Voltage	55 max.	volts
Screen Supply Voltage	90 max.	volts
Anode-Grid (Grid #2) Voltage	90 max.	volts
Total Cathode Current	3 max.	ma.

**Typical Operation:**

Filament	1.4	d-c volts
Plate	90	volts
Screen	45**	volts
Anode-Grid	90	volts
Control-Grid (Grid #2) #	0	volts
Oscillator-Grid (Grid #1) Resistor	200000	ohms
Plate Res.	0.6	min megohm
Conversion Transcond.	250	μmhos
Convers. Transcond. with grid #4 bias of -3 volts	5 approx.	μmhos
Plate Cur.	0.55	ma.
Screen Cur.	0.6	ma.
Anode-Grid Cur.	1.2	ma.
Oscillator-Grid Cur.	0.035	ma.
Total Cathode Cur.	2.4	ma.

NOTE: The transconductance of the oscillator portion (not oscillating) is 600 micromhos under the following conditions: plate volts, 90; screen volts, 45; control-grid volts, 0; anode-grid volts, 90; and oscillator-grid volts, 0.

\* The filament is designed so that it may be operated satisfactorily when connected directly across a 1.5-volt dry battery.

▲ With close-fitting shield connected to negative filament terminal.

\*\* Obtained preferably by using a properly by-passed 70000-ohm voltage-dropping resistor in series with a 90-volt supply.

# A resistance of at least 1.0 megohm should be in the grid return to negative filament pin.

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 JULY, 1940 SYDNEY, AUSTRALIA

1A7-GT

# RADIOTRON

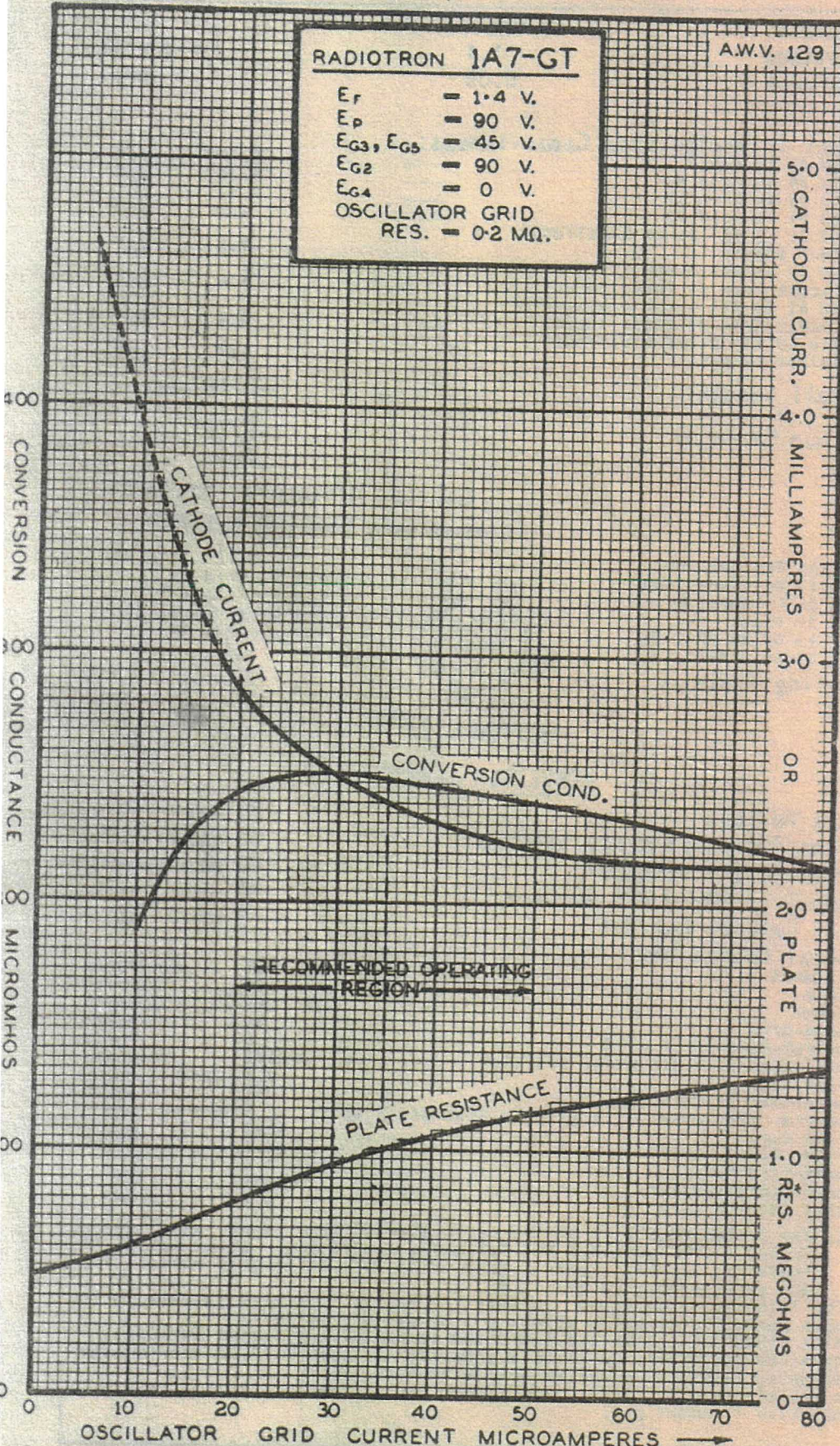
1A7-GT

## OPERATION CHARACTERISTIC

**RADIOTRON 1A7-GT**

$E_f = 1.4 \text{ V.}$   
 $E_p = 90 \text{ V.}$   
 $E_{G3}, E_{G5} = 45 \text{ V.}$   
 $E_{G2} = 90 \text{ V.}$   
 $E_{G4} = 0 \text{ V.}$   
 OSCILLATOR GRID  
 RES. =  $0.2 \text{ M}\Omega.$

A.W.V. 129



**AMALGAMATED WIRELESS VALVE CO. PTY. LTD.**  
 JULY, 1940  
 SYDNEY, AUSTRALIA

## RADIOTRON

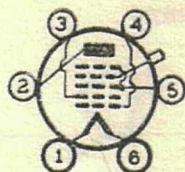
1C6

## PENTAGRID CONVERTER

1C6  
1C7-G  
SHEET 1

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Maximum Overall Length		4-17/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Small Metal
Mounting Position		Vertical, Base Down
Base		Small 6-Pin

Pin 1-Filament +  
Pin 2-Plate  
Pin 3-Grid # 2  
Pin 4-Grid # 1



Pin 5-Grids # 3 & # 5  
Pin 6-Filament -  
Cap -Grid # 4

BOTTOM VIEW (6L)

Maximum Ratings, Interelectrode Capacitances and Typical Operating Conditions are the same as for type 1C7-G. Curves under type 1C7-G also apply to type 1C6.

Horizontal operation permitted if pins 1 and 6 are in a vertical plane

## RADIOTRON

1C7-G

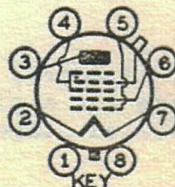
## PENTAGRID CONVERTER



Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Direct Interelectrode Capacitances:		
Grid #4 to Plate	0.30*	$\mu\mu\text{F}$
Grid #4 to Grid #2	0.30*	$\mu\mu\text{F}$
Grid #4 to Grid #1	0.15*	$\mu\mu\text{F}$
Grid #1 to Grid #2	1.5	$\mu\mu\text{F}$
Grid #4 to All Other Electrodes(R-F Input)	10	$\mu\mu\text{F}$
Grid #2 to All Other Electrodes(Osc.Output)	6	$\mu\mu\text{F}$
Grid #1 to All Other Electrodes(Osc.Input)	6	$\mu\mu\text{F}$
Plate to All Other Electrodes(Mixer Output)	10	$\mu\mu\text{F}$

Maximum Overall Length	4-15/32"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap	Skirted Miniature
Mounting Position	Vertical, Base Down

Base  
Pin 1-No connection  
Pin 2-Filament +  
Pin 3-Plate  
Pin 4-Grids # 3 & # 5  
Pin 5-Grid # 1



Small Shell Octal 8-Pin  
Pin 6-Grid # 2  
Pin 7-Filament -  
Pin 8-No Connection  
Cap -Grid # 4

BOTTOM VIEW (G-7Z)

\* With shield-can connected to negative filament terminal.  
o Horizontal operation permitted if pins 2 and 7 are in a vertical plane.

# RADIOTRON

1C7-G

## PENTAGRID CONVERTER

(continued from preceding page)

### CONVERTER SERVICE

Plate Voltage	180 max. volts
Screen Grids (#3 & #5) Voltage	67.5 max. volts
Screen Supply Voltage	180 max. volts
Anode Grid (Grid #2) Voltage	135 max. volts
Anode-Grid Supply Voltage	180 max. volts
Control-Grid (Grid #4) Voltage	0 min. volts
Plate Dissipation	0.3 max. watt
Screen Dissipation	0.2 max. watt
Anode-Grid Dissipation	0.4 max. watt
Total Cathode Current	9 max. mA.

#### Typical Operation:

Filament Voltage	2.0	2.0 d-c	volts
Plate Voltage	135	180	volts
Screen Voltage	67.5	67.5	volts
Anode-Grid Supply	$\Delta$ 135	$\Delta$ 180	volts
Control Grid	$\nabla$ -3	$\nabla$ -3	volts
Osc.-Grid (Grid #1) Resistor	50000	50000	ohms
Plate Resistance (approx.)	0.6	0.7	megohm
Conversion Transcond.	300	325	$\mu$ mhos
Convers. Transcond. (approx.) with Grid #4 bias of -14 volts	4	4	$\mu$ mhos
Plate Current	1.3	1.5	mA.
Screen Current	2.5	2.0	mA.
Anode Grid Current	3.1	4.0	mA.
Oscillator Grid Current	0.2	0.2	mA.
Total Cathode Current	7.1	7.7	mA.

Note: The transconductance of the oscillator portion (not oscillating) is 1050 micromhos under the following conditions: plate volts, 180; screen volts, 67.5; anode-grid volts, 135; and oscillator-grid volts, 0.

$\nabla$  Negative filament return. The grid circuit resistance should not exceed 3 megohms for a single controlled stage, 2.5 megohms for two controlled stages, or 2 megohms for three controlled stages.

$\Delta$  Applied through properly by-passed 20000-ohm voltage-dropping resistor.

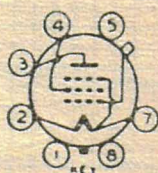
# RADIOTRON

ID5-GP

ID5-GP

## SUPER-CONTROL R-F AMPLIFIER PENTODE

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.060	amp.
Overall Length		4-7/32" to 4-15/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Skirted Miniature
Base		Small Shell Octal 7-Pin
Pin 1-No Connection		Pin 5-No Connection
Pin 2-Filament +		Pin 7-Filament-
Pin 3-Plate		Pin 8-No Connection
Pin 4-Screen		Cap -Grid
Mounting Position	BOTTOM VIEW (C-5Y) Vertical, Base Down <sup>◇</sup>	



### AMPLIFIER - Class A<sub>1</sub>

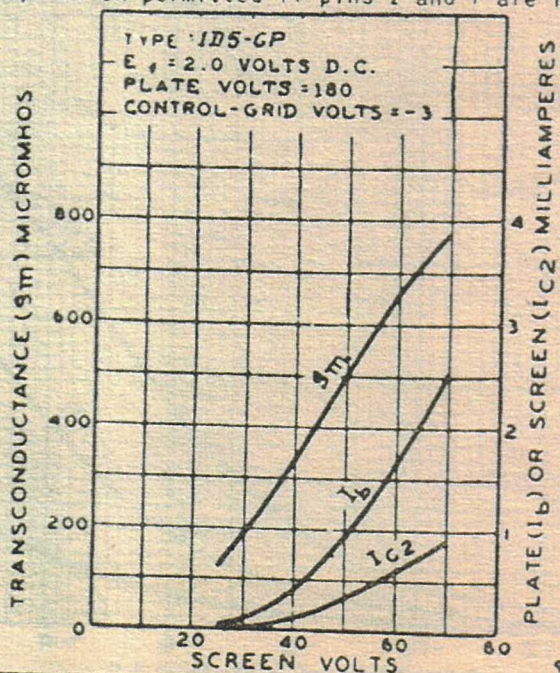
Plate Voltage	180 max. volts
Screen Voltage	67.5 max. volts
Grid Voltage	-3 min. volts

#### Typical Operation and Characteristics:

Filament	2.0	2.0	d-c volts
Plate	90	180	volts
Screen	67.5	67.5	volts
Grid	-3	-3	volts
Amp. Fact.	425	750	
Plate Res.	0.6	1.0	approx. megohm
Transcond.	720	750	μhos
Transcond.*	15	15	μhos
Plate Cur.	2.2	2.3	ma.
Screen Cur.	0.9	0.8	ma.

\* At -15 volts bias.

◇ Horizontal operation permitted if pins 2 and 7 are in vertical plane



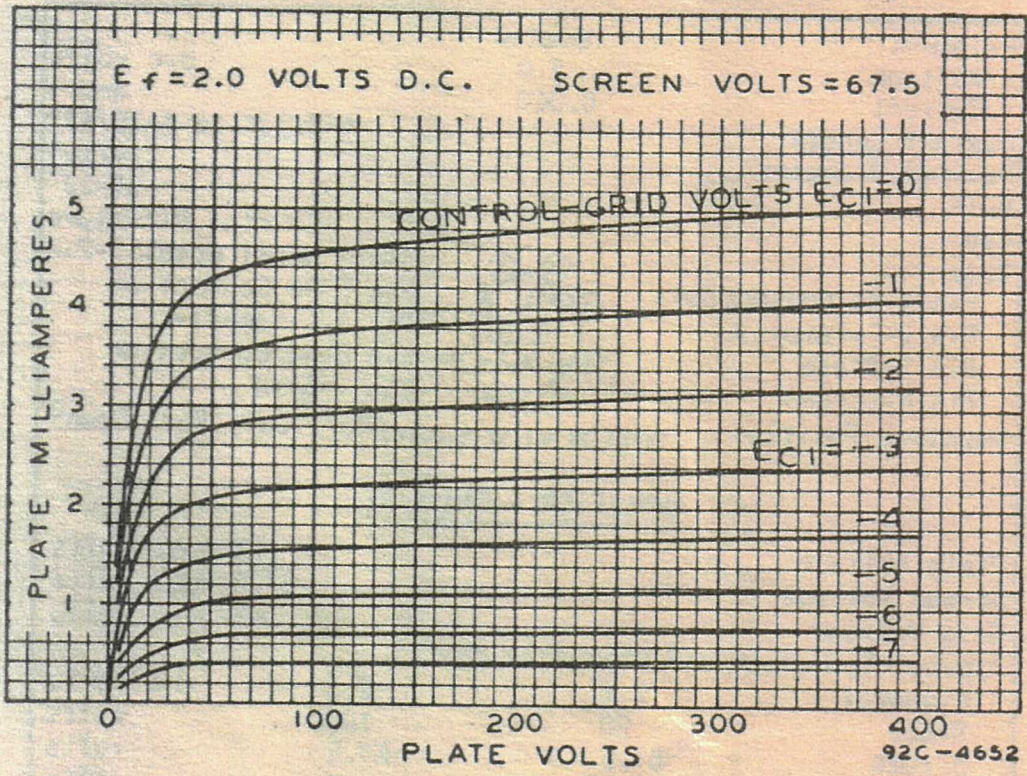
92C-4655

1D5-GP

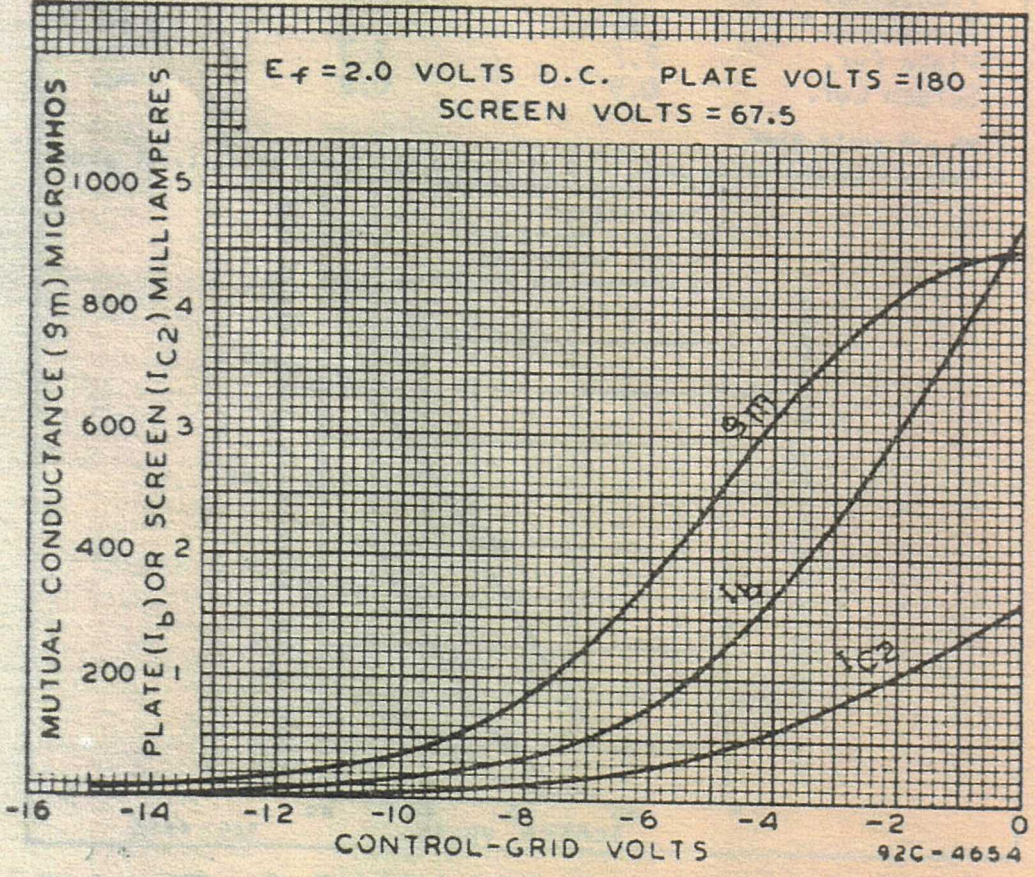
# RADIOTRON

1D5-GP

## AVERAGE PLATE CHARACTERISTICS



## AVERAGE CHARACTERISTICS



# RADIOTRON

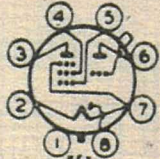
ID8-GT

19/6 ★

ID8-GT

## DIODE-TRIODE-POWER AMPLIFIER PENTODE

Filament*	Coated	
Voltage	1.4	d-c volts
Current	0.1	amp.
Maximum Overall Length		3-5/16"
Maximum Diameter		1-5/16"
Bulb		T-9
Cap		Skirted Miniature - Style C
Base		Intermediate Shell Octal 8-Pin
Pin 1 - No Connection		Pin 6 - Triode Plate
Pin 2 - Filament †		Pin 7 - Filament -
Pin 3 - Pentode Plate		Pin 8 - Diode Plate
Pin 4 - Pentode Screen		Cap - Triode Grid
Pin 5 - Pentode Grid		
Mounting Position	BOTTOM VIEW (G-8AJ)	Any



### TRIODE UNIT - Class A<sub>1</sub> Amplifier

Operating Conditions and Characteristics:

Plate Voltage	45	67.5	90 max.	volts
Grid Voltage	0	0	0	volts
Amplification Factor	25	25	25	
Plate Resistance	77000	55500	43500	ohms
Transconductance	325	450	575	μmhos
Plate Current	0.3	0.6	1.1	ma.

### PENTODE UNIT - Class A<sub>1</sub> Amplifier

Operating Conditions and Characteristics:

Plate Voltage	45	62.5	67.5	90 max.	volts
Screen Voltage	45	62.5	67.5	90 max.	volts
Grid Voltage	-4.5	-5	-6	-9	volts
Plate Resistance	0.3	0.2	0.2	0.2	megohm
Transconductance	650	875	875	925	μmhos
Plate Current	1.6	3.8	3.8	5	ma.
Screen Current	0.3	0.8	0.8	1.0	ma.
Load Resistance	20000	16000	16000	12000	ohms
Power Output †	35	90	100	200	mw

† Total harmonic distortion = 10%.

### DIODE UNIT

The diode is located at the negative end of the filament, and is independent of the triode unit and of the pentode unit except for the common filament.

\* The filament is designed for operation from a dry battery of which the voltage on load does not exceed 1.54 volts.

ID8-GT

# RADIOTRON

ID8-GT

AVERAGE PLATE CHARACTERISTICS  
TRIODE UNIT

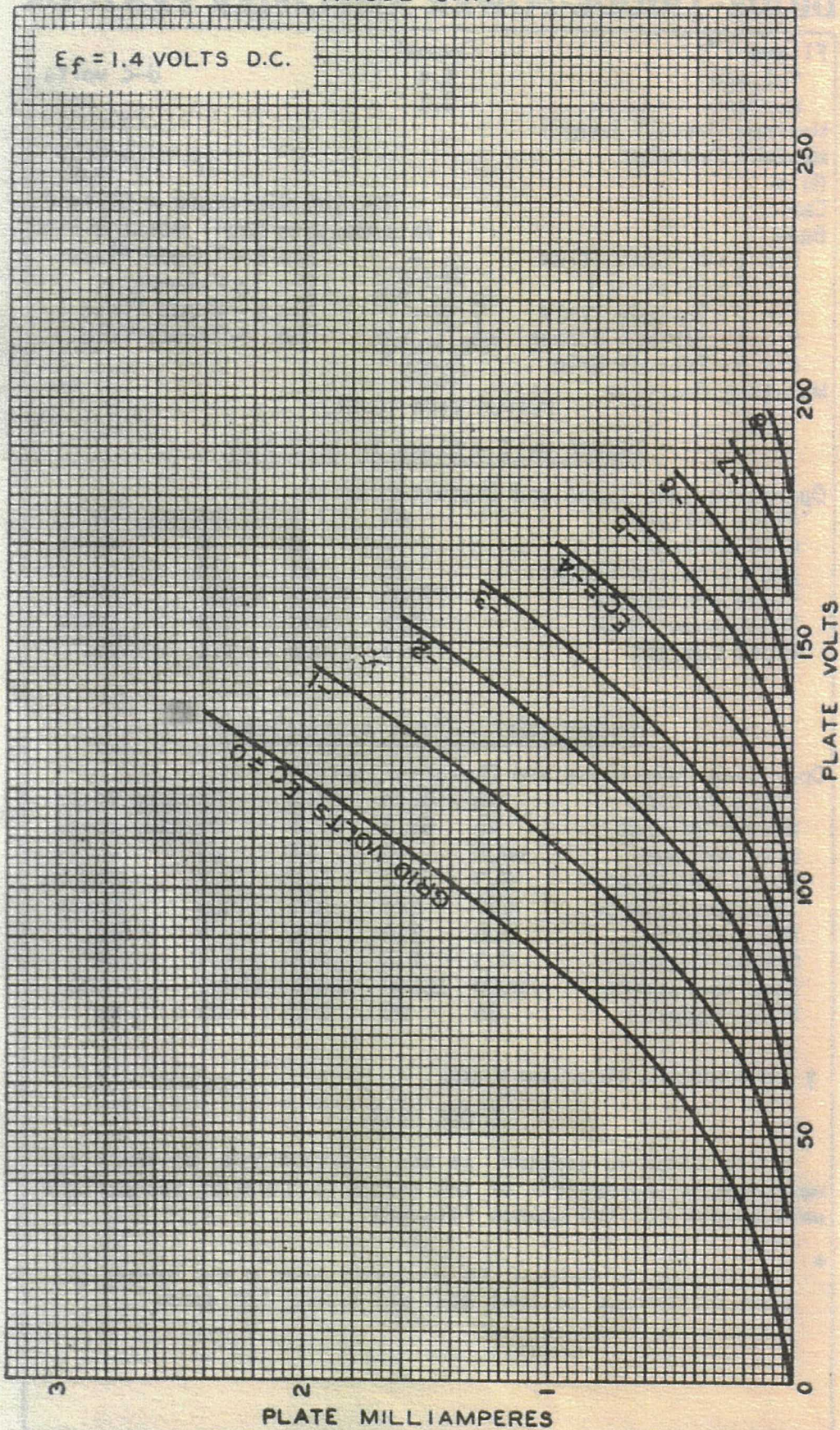


PLATE MILLIAMPERES

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
FEBRUARY, 1940

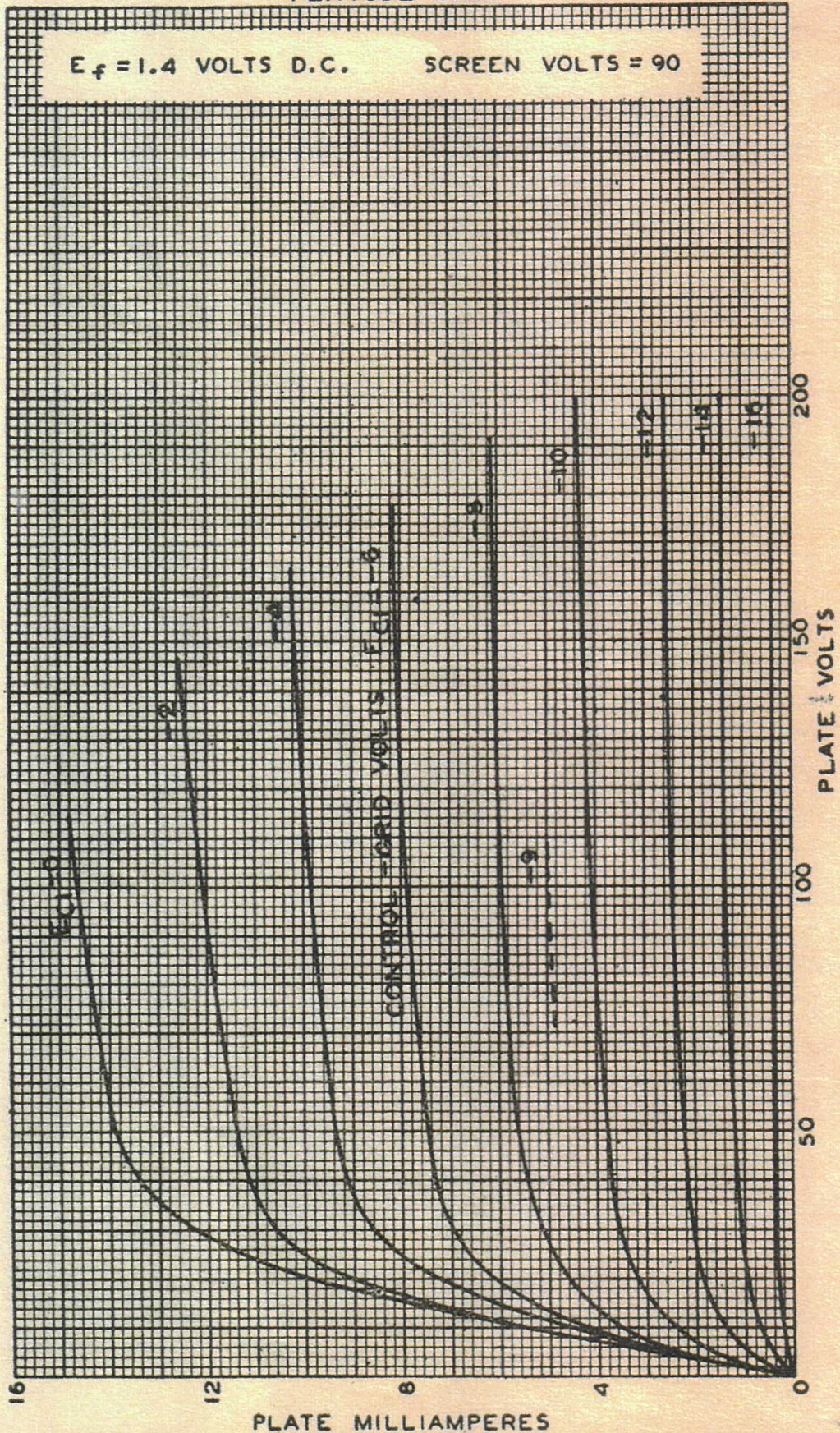
SYDNEY, AUSTRALIA

# RADIOTRON

ID8-GT

AVERAGE PLATE CHARACTERISTICS  
PENTODE UNIT

ID8-GT



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
FEBRUARY, 1940

SYDNEY, AUSTRALIA

# RADIOTRON

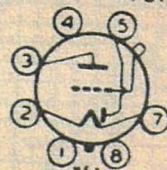
IH5-GT

## DIODE HIGH-MU TRIODE

IH5-GT



Filament *	Coated	
Voltage	1.4	d-c volts
Current	0.05	amp.
Maximum Overall Length		3-5/16"
Maximum Diameter		1-5/16"
Bulb		T-9
Cap		
Base		Skirted Miniature - Style C
		Intermediate Shell Octal 7-Pin
Pin 1 - No Connection		Pin 5 - Diode Plate
Pin 2 - Filament +		Pin 7 - Filament -
Pin 3 - Triode Plate		Pin 8 - No Connection
Pin 4 - No Connection		Cap - Triode Grid
Mounting Position		Any



BOTTOM VIEW (G-52)

### TRIODE UNIT - Class A<sub>1</sub> Amplifier

Operating Conditions and Characteristics

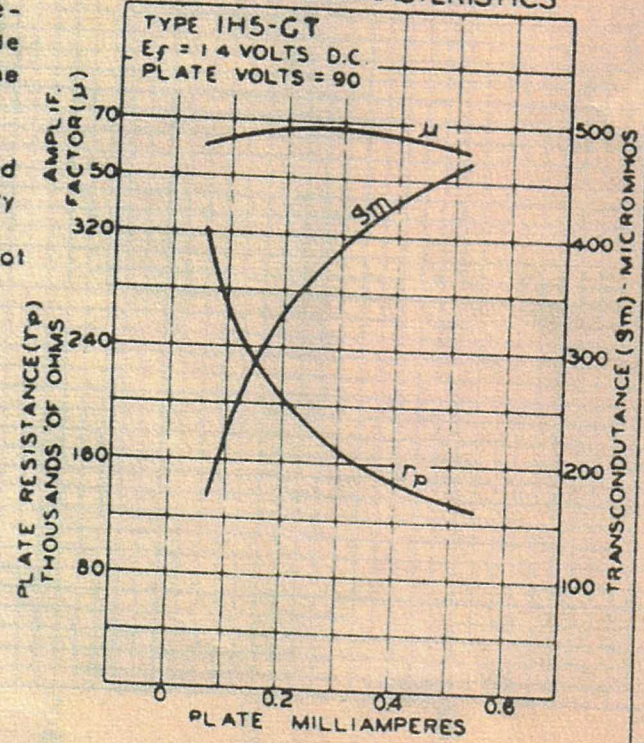
Filament *	1.4	d-c volts
Plate	90 max.	volts
Grid	0	volts
Amp. Fact.	65	volts
Plate Res.	240000	ohms
Transcond.	275	μmhos
Plate Cur.	0.14	ma.

### DIODE UNIT

The diode is located at the negative end of the filament, and is independent of the triode unit except for the common filament.

\* The filament is designed for operation from a dry battery of which the voltage on load does not exceed 1.54 volts.

### AVERAGE CHARACTERISTICS



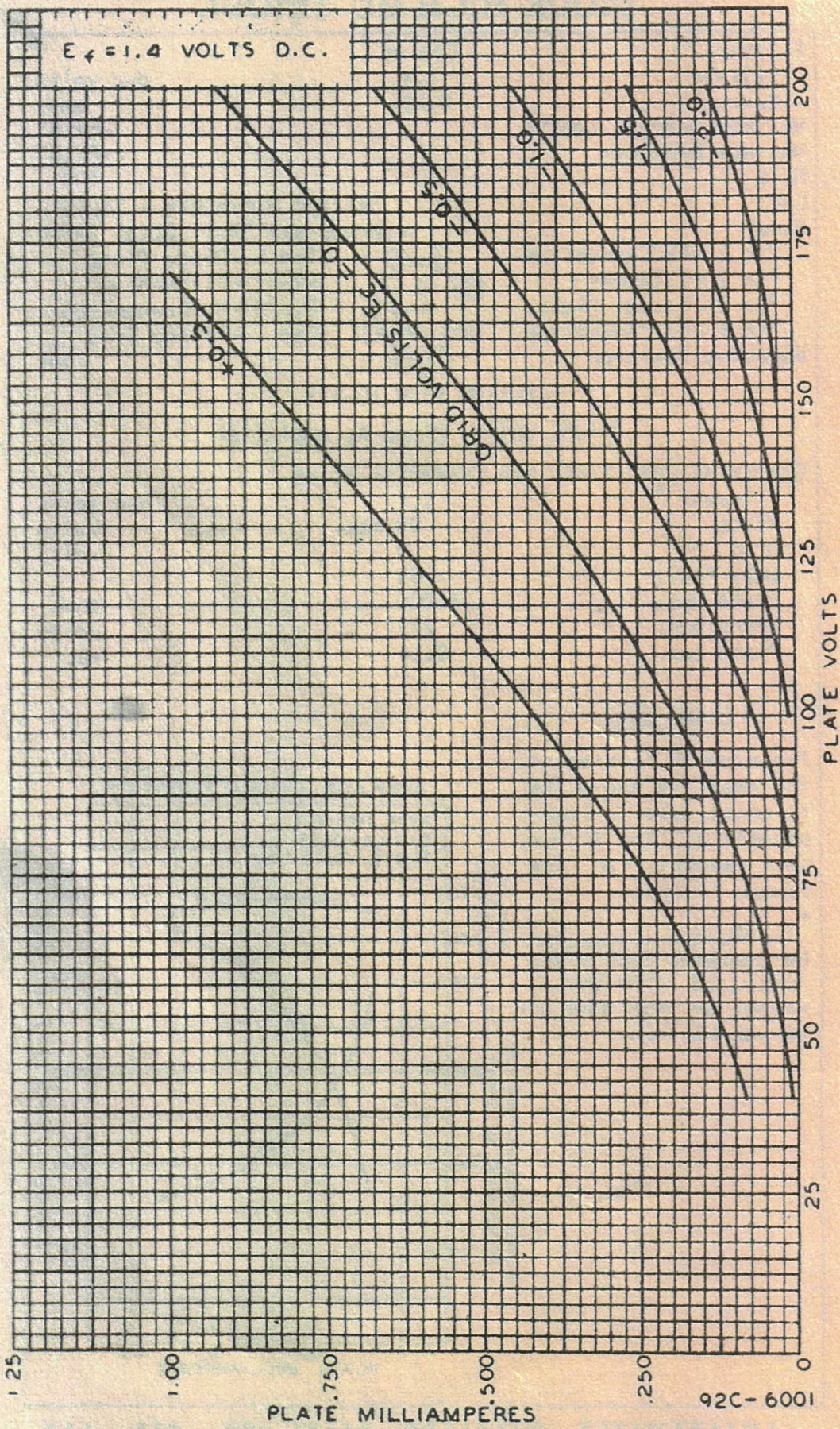
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
JULY, 1940  
SYDNEY, AUSTRALIA

1H5-GT

# RADIOTRON

1H5-GT

## AVERAGE PLATE CHARACTERISTICS



92C-6001

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
SYDNEY, AUSTRALIA

JULY, 1940

# RADIOTRON

1J6-G

1J6-G  
★

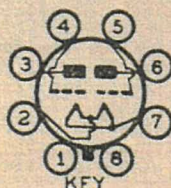
## CLASS B TWIN AMPLIFIER

Filament Voltage	Coated	
Current	2.0	d-c volts
	0.24	amp.

Maximum Overall Length	4-1/8"
Maximum Diameter	1-9/16"
Bulb	ST-12

Mounting Position  $\diamond$  Vertical, Base Down  
Base Small Shell Octal 8-Pin

- Pin 1-No Connection
- Pin 2-Filament +
- Pin 3-Plate (T<sub>2</sub>)
- Pin 4-Grid (T<sub>2</sub>)



- Pin 5-Grid (T<sub>1</sub>)
- Pin 6-Plate (T<sub>1</sub>)
- Pin 7-Filament -
- Pin 8-No Connection

BOTTOM VIEW

(for convenience, one triode unit is identified as T<sub>1</sub>, the other as T<sub>2</sub>)

### CLASS B POWER AMPLIFIER

Plate Voltage					135	max.	volts
Peak Plate Current (per plate)					50	max.	mA.
Typical Operation:							
Filament Voltage	2.0	2.0	2.0	2.0	d-c volts		
Plate Voltage	135	135	135	135	volts		
Grid Voltage	-4.5	-4.5	-4.5	0	volts		
Zero-Sig. Plate Cur. (total)	1.4	1.4	1.4	10	mA.		
Max. Sig. Plate Cur. (total)	13.8	18.0	24.5	-	mA.		
Effective Load Res. (plate to plate)	20000	15000	10000	10000	ohms		
Peak A-F Grid-to-Grid Voltage	42	60	66	-	volts		
Average Power Input*	38#	90	120	170	approx. mW.		
Power Output	1.0	1.25	1.6	2.1	approx. watts		

$\diamond$  Horizontal operation permitted if pins 1 and 4 are in vertical plane.

\* Applied between grids to give indicated value of power output.

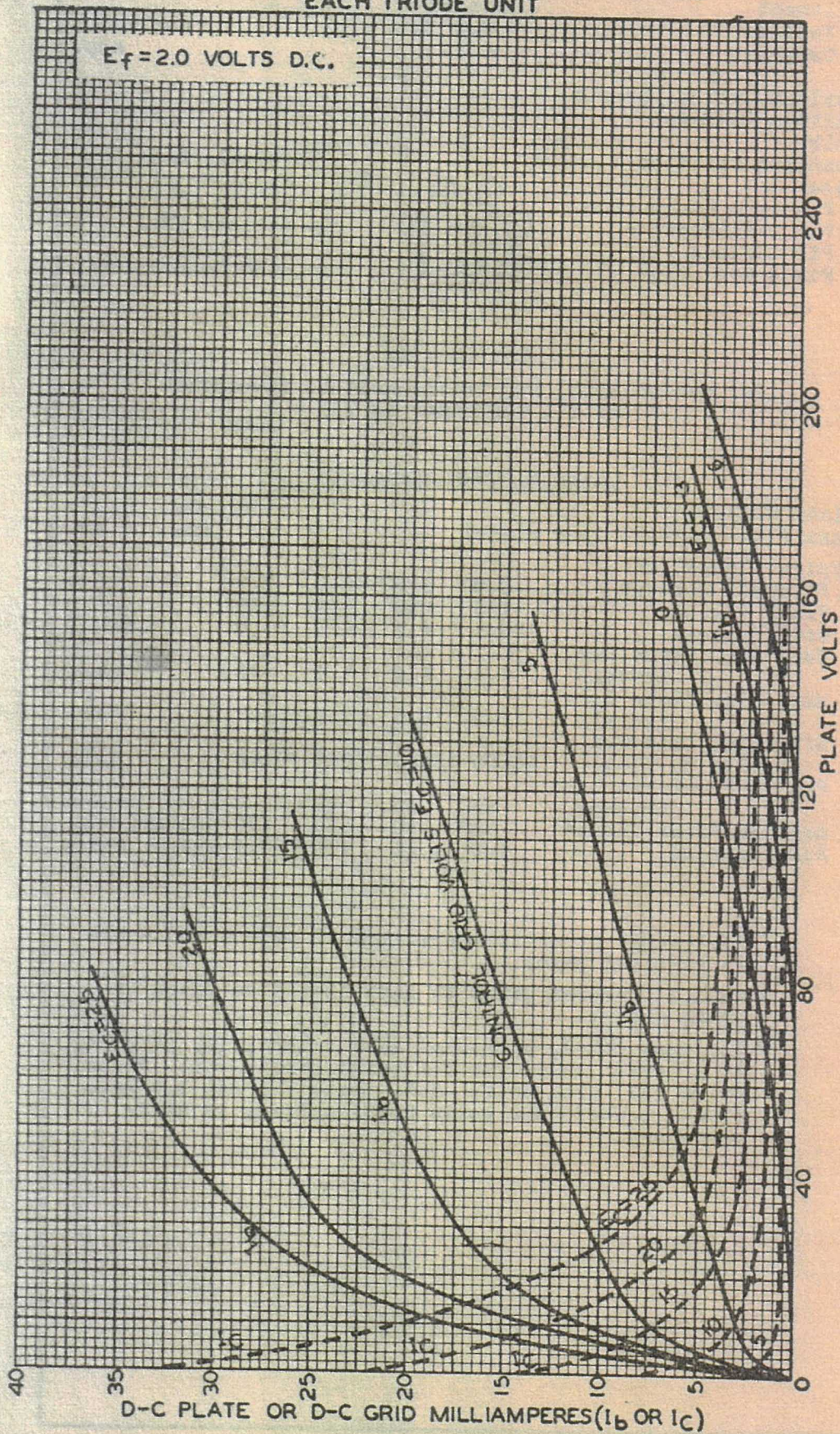
# One type 1K5-G, connected as a triode, may be used as a driver under the following conditions:- Plate volts 135, grid volts -4.5, plate current 3.5 mA., driver transformer ratio 2.2:1 primary to half-secondary.

1J6-G

# RADIOTRON

1J6-G

## AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



92C-4882

# RADIOTRON

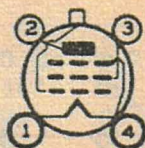
1K4

## PENTODE AMPLIFIER

1K4  
1K5-G  
SHEET 1



Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Maximum Overall Length		4-15/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Small Metal
Mounting Position		Any
Base		Small 4-Pin
Pin 1-Filament +		Pin 4-Filament -
Pin 2-Plate		Cap -Grid
Pin 3-Screen		



BOTTOM VIEW (4M)

Maximum Ratings, Interelectrode Capacitances, Typical Operating Conditions and Curves are the same as for type 1K5-G. Types 1K4 and 1K5-G are identical electrically.

# RADIOTRON

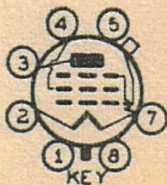
1K5-G

## PENTODE AMPLIFIER



Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Direct Interelectrode Capacitances*:		
Pentode Connection:-		
Grid to Plate	0.010	max. $\mu\mu\text{F.}$
Input	6.0	$\mu\mu\text{F.}$
Output	9.5	$\mu\mu\text{F.}$
Triode Connection#:-		
Grid to Plate	3.5	$\mu\mu\text{F.}$
Grid to Filament	2.5	$\mu\mu\text{F.}$
Plate to Filament	15.5	$\mu\mu\text{F.}$

Maximum Overall Length	4-29/32"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap	Skirted Miniature
Mounting Position	Any
Base	Small Shell Octal 7-Pin
Pin 1-No Connection	Pin 5-No Connection
Pin 2-Filament +	Pin 7-Filament -
Pin 3-Plate	Pin 8-No Connection
Pin 4-Screen	Cap -Grid



BOTTOM VIEW (G-5Y)

\* With shield-can connected to negative filament terminal.  
# Screen connected to plate.

1K5-G

# RADIOTRON

1K5-G

## PENTODE AMPLIFIER

(continued from preceding page)

### AMPLIFIER - Class A<sub>1</sub> (Pentode Connection)

Plate Voltage					180 max. volts
Screen Voltage					135 max. volts
Screen Supply Voltage					180 max. volts
Plate Dissipation					0.5 max. watt
Screen Dissipation					0.13 max. watt
Typical Operation:-					
Filament Voltage	2.0	2.0	2.0	2.0	d-c volts
Plate Voltage	90	135	135	135	volts
Screen Voltage	67.5	30	45	67.5	volts
Grid Voltage*	0	0	0	0	volts
Plate Current	2.48	0.65	1.25	2.5	mA.
Screen Current	0.95	0.23	0.48	0.93	mA.
Plate Resistance (approx)	0.75	2.9	1.75	1.0	megohm
Transconductance	1020	620	820	1050	μmhos

### AMPLIFIER - Class A<sub>1</sub> (Triode Connection).#

Plate Voltage					180 max. volts
Plate & Screen Dissipation (total)					1.1 max. watts
Typical Operation:-					
Filament Voltage	2.0	2.0	2.0	2.0	d-c volts
Plate Voltage	90	135	180		volts
Grid Voltage*	-3.0	-4.5	-6.0		volts
Plate Current	1.5	3.5	5.9		mA.
Plate Resistance	14,800	10,700	9,000		ohms
Transconductance	1,000	1,400	1,700		μmhos
Amplification Factor	14.8	15.0	15.3		
Load Resistance	30,000	15,000	10,000		ohms
Total Harmonic Distortion	5	5	5		%
Power Output	13	50	100		approx. mW.

\* Negative Filament Return. The grid circuit resistance should not exceed 3 megohms except under resistance coupled conditions.

# Screen connected to plate.

# RADIOTRON

1K5-G

## AVERAGE PLATE CHARACTERISTICS

1K5-G  
SHEET 2

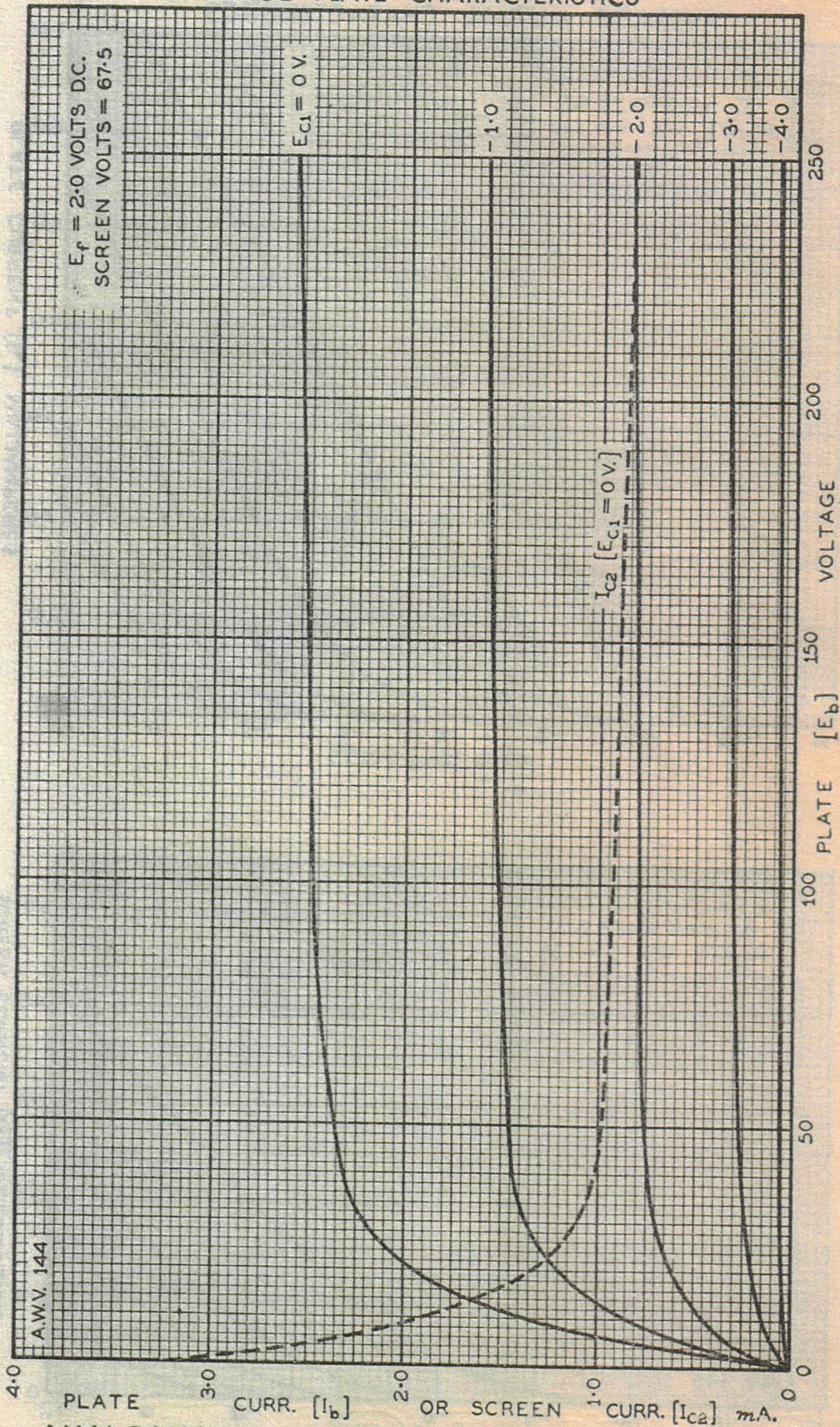


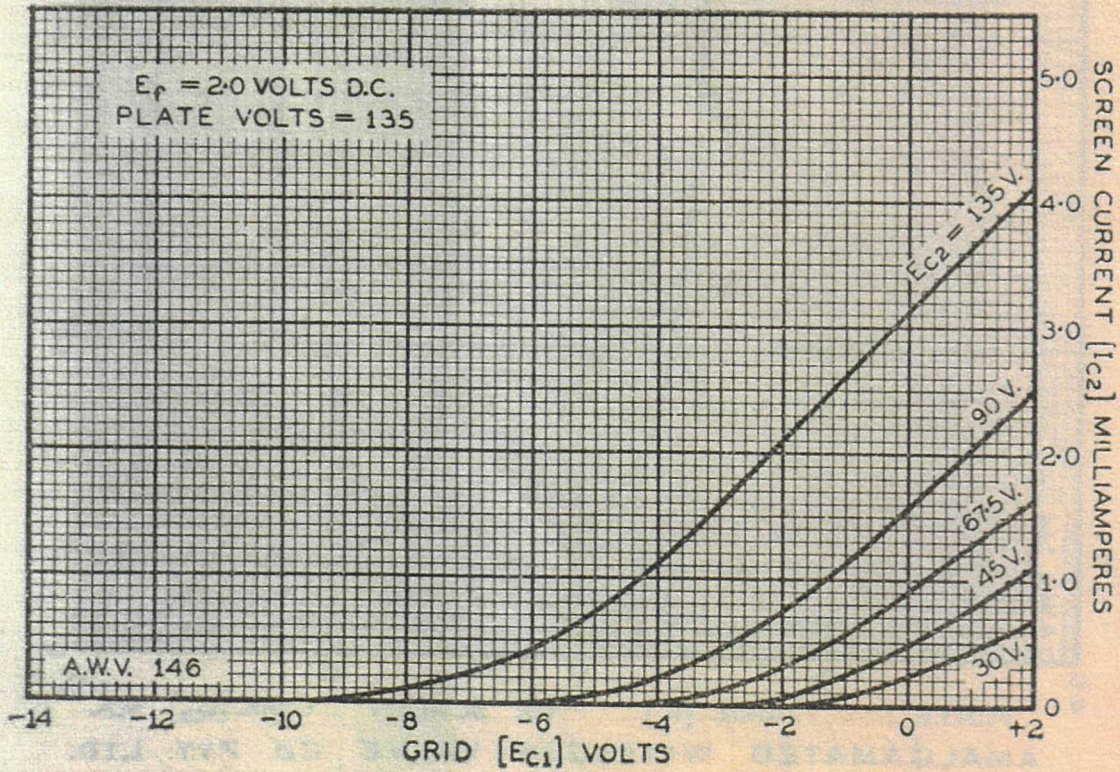
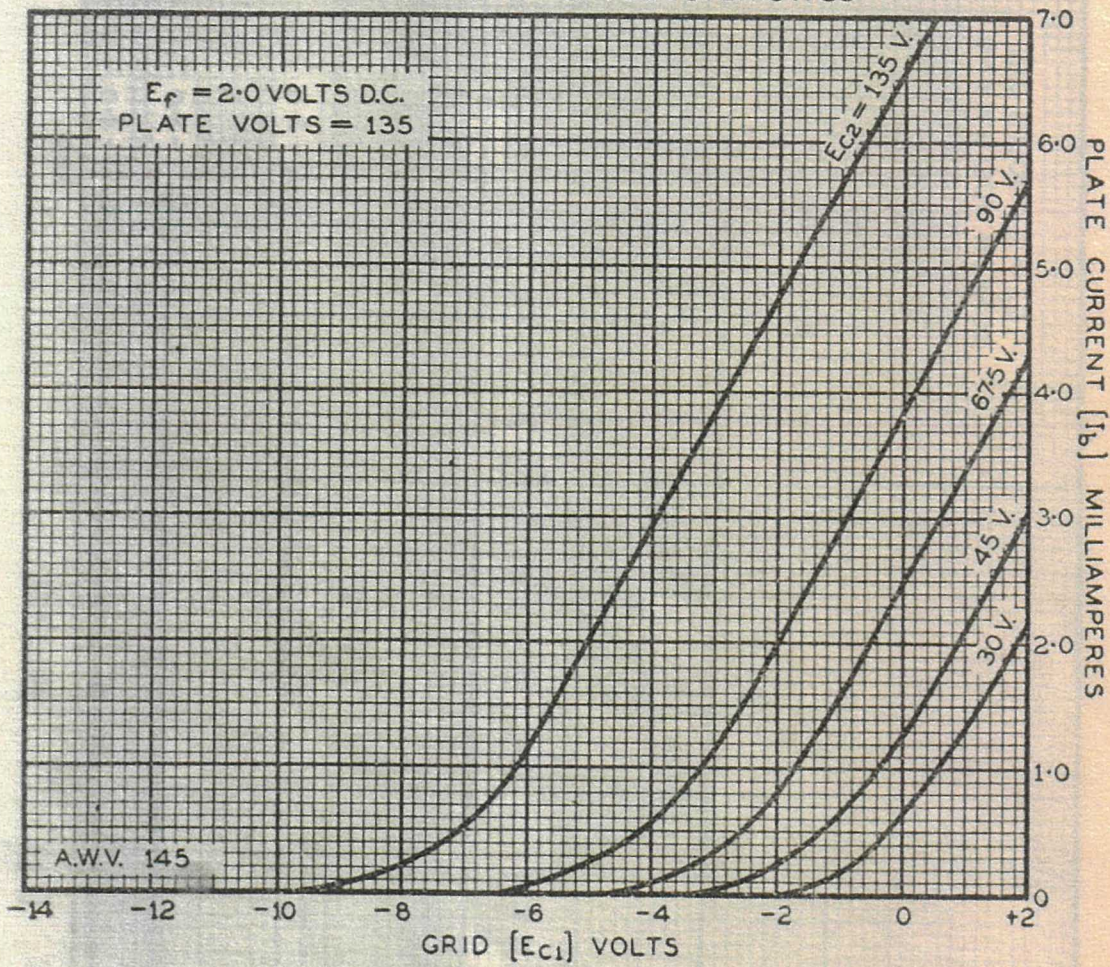
PLATE CURR. [ $I_b$ ] OR SCREEN CURR. [ $I_{c2}$ ] mA.  
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
DECEMBER, 1940 SYDNEY, AUSTRALIA

1K5-G

# RADIOTRON

1K5-G

## AVERAGE MUTUAL CHARACTERISTICS

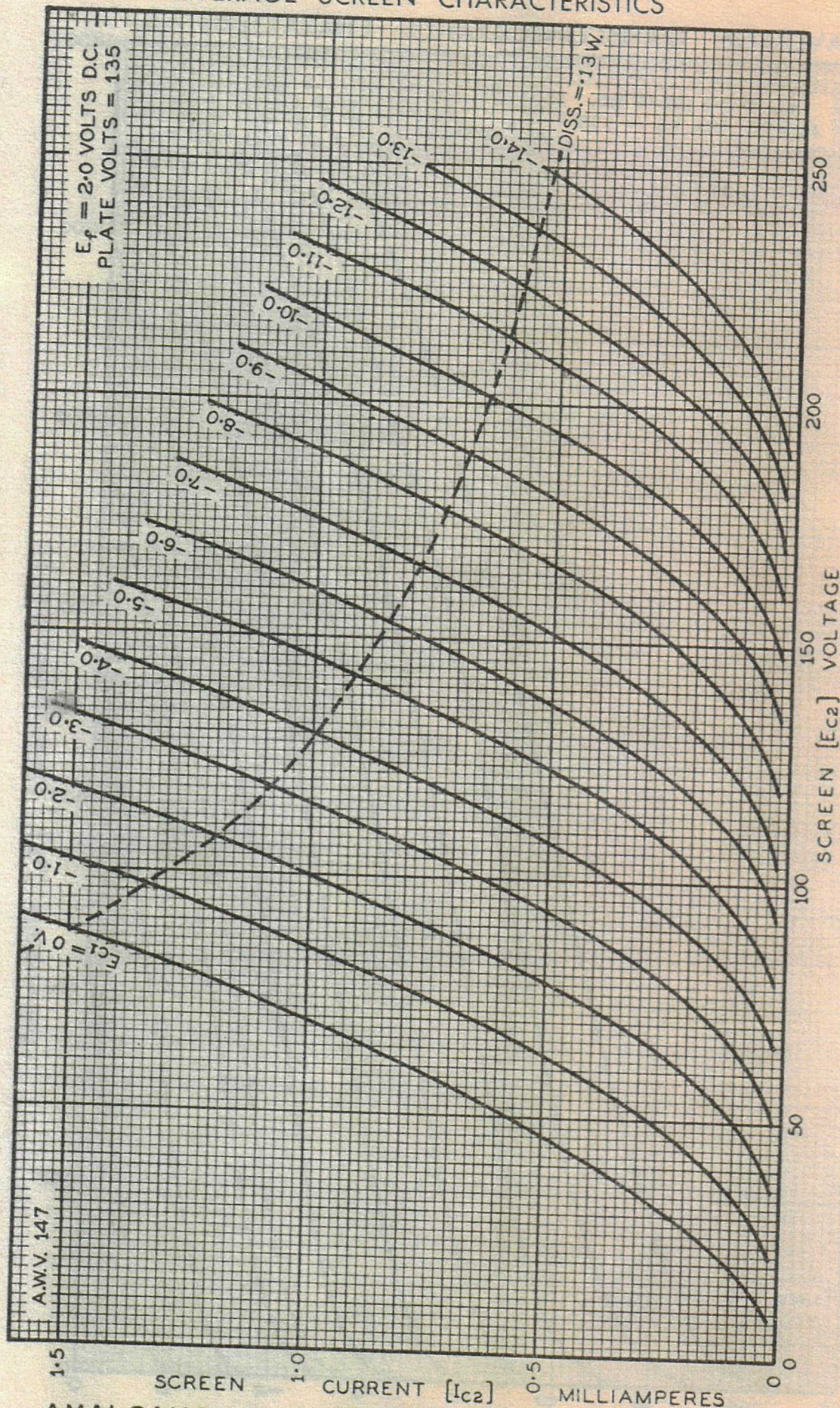


# RADIOTRON

1K5-G

## AVERAGE SCREEN CHARACTERISTICS

1K5-G  
SHEET 3



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
DECEMBER, 1940  
SYDNEY, AUSTRALIA

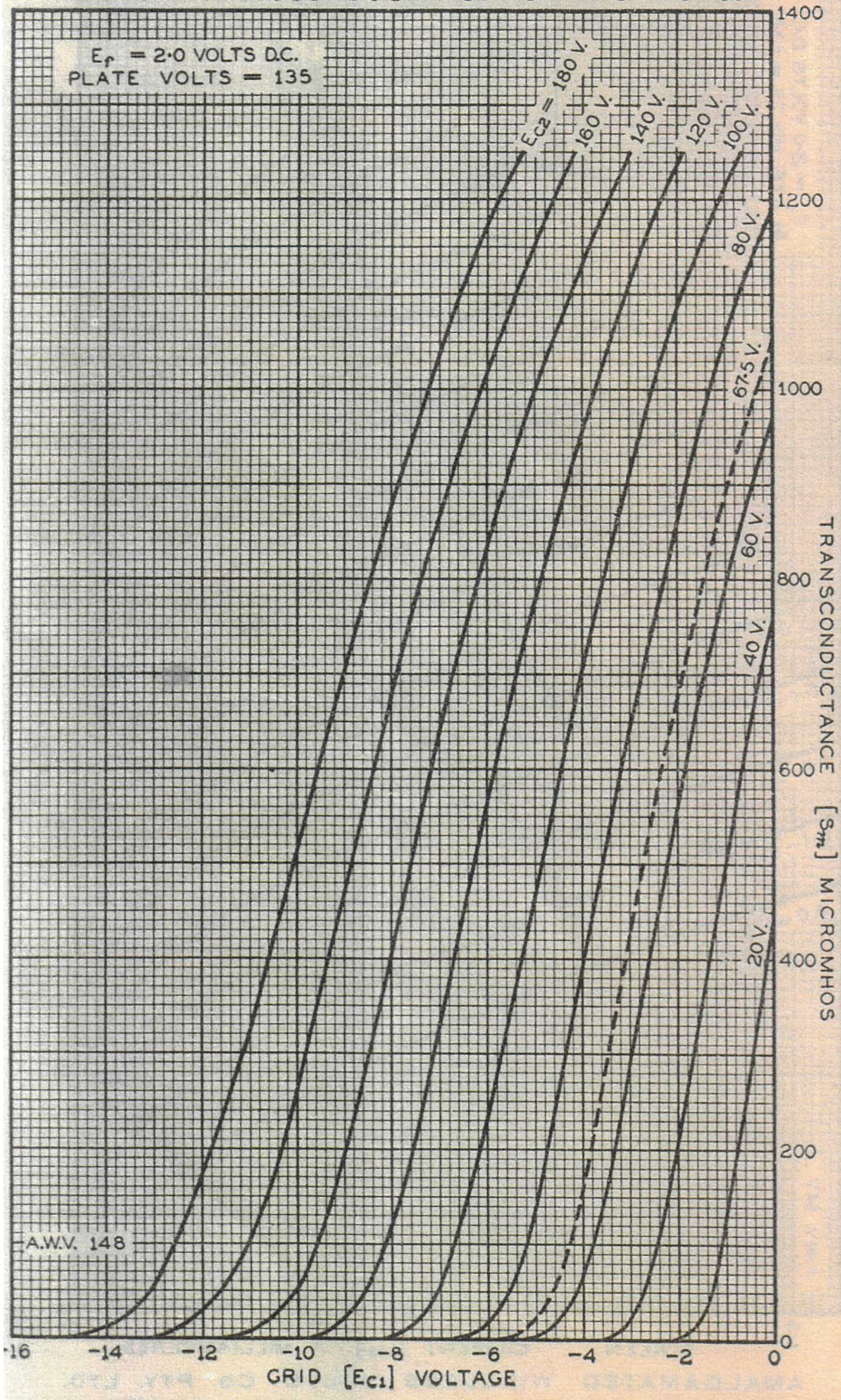
1K5-G

# RADIOTRON

## 1K5-G

### AVERAGE TRANSCONDUCTANCE CHARACTERISTICS

$E_p = 2.0$  VOLTS D.C.  
PLATE VOLTS = 135



A.W.V. 148

TRANSCONDUCTANCE [Sm] MICROMHOS

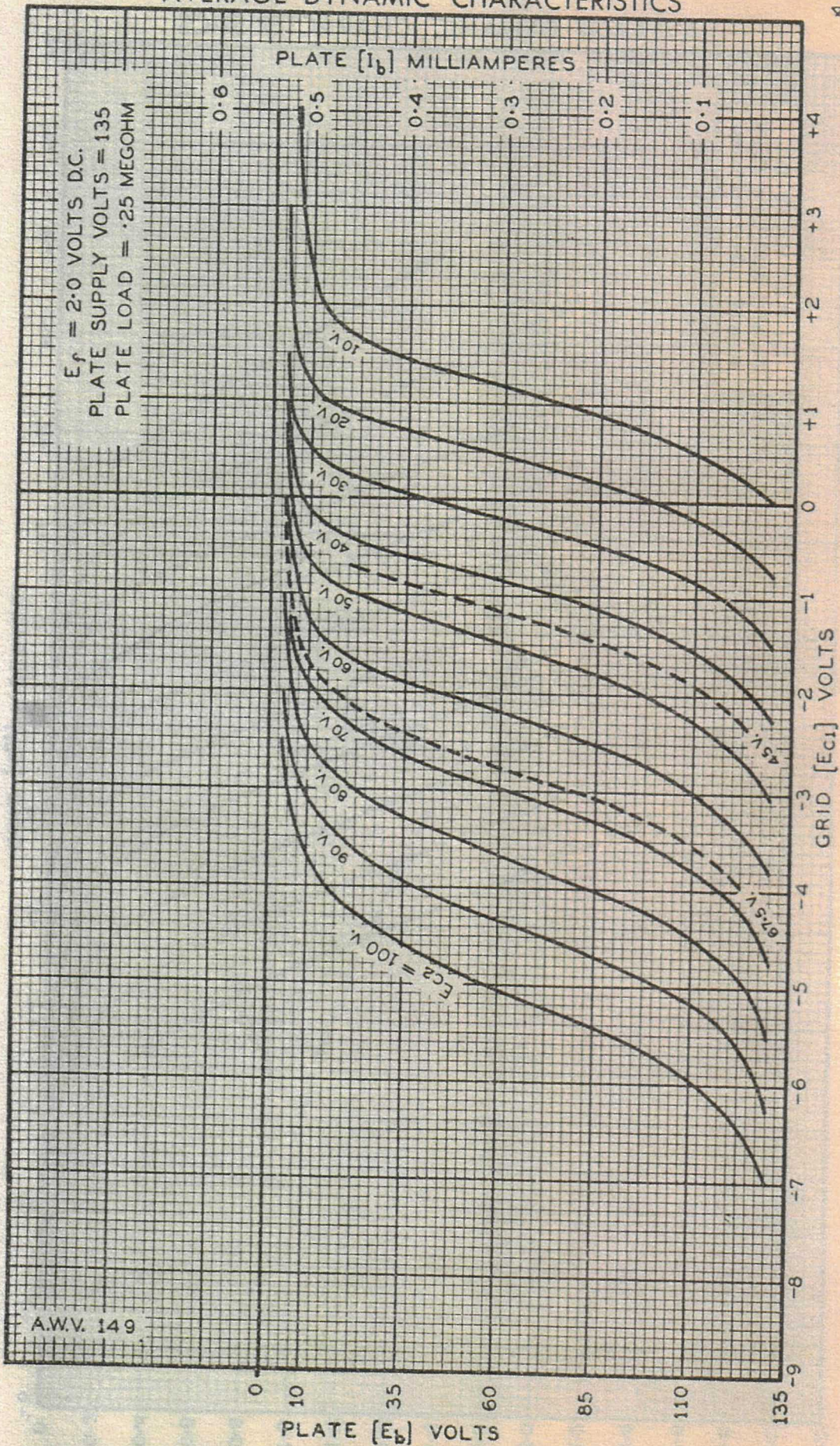
GRID [Ec1] VOLTAGE

# RADIOTRON

1K5-G

AVERAGE DYNAMIC CHARACTERISTICS

1K5-G  
SHEET 4



A.W.V. 149

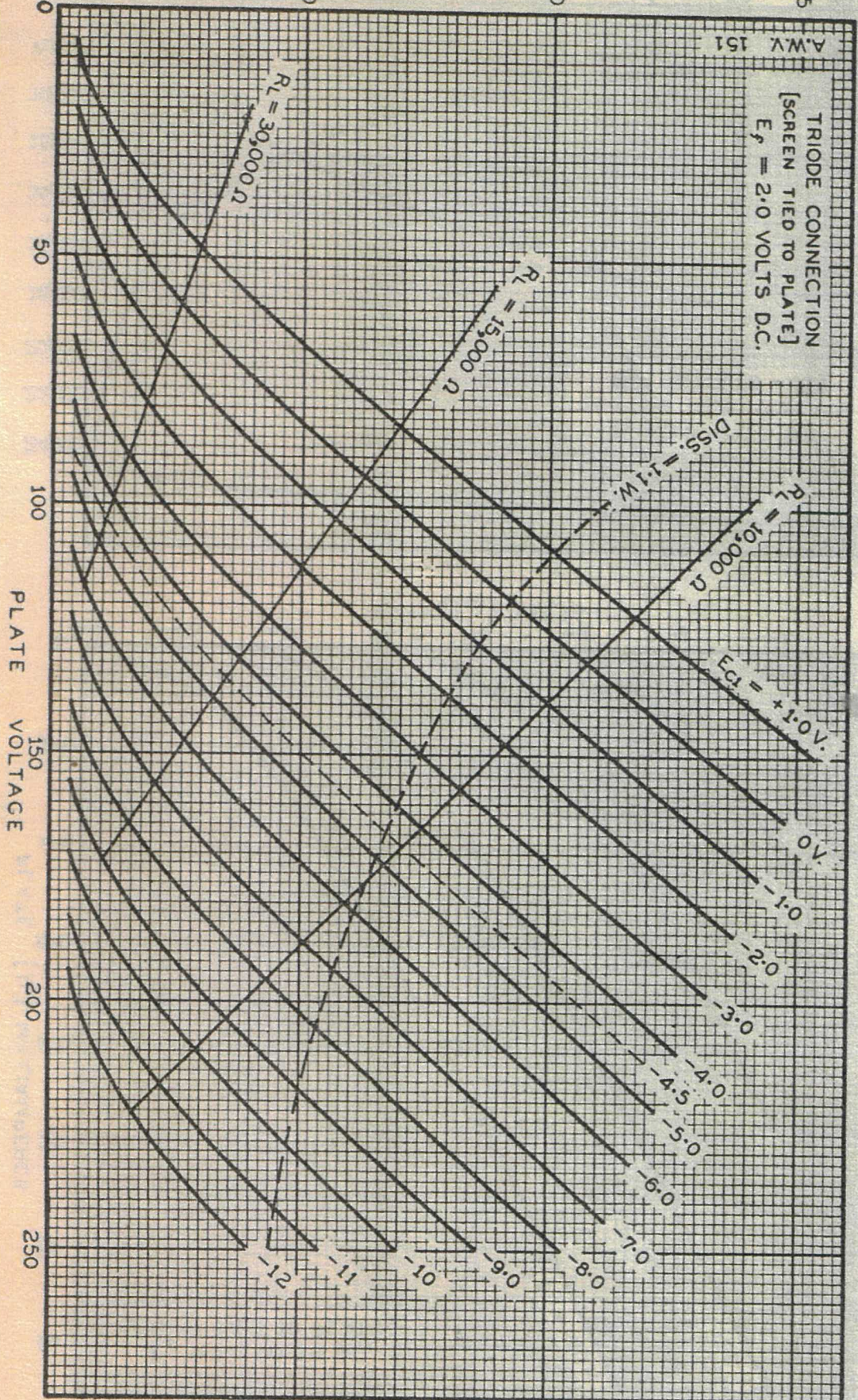
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
DECEMBER, 1940  
SYDNEY, AUSTRALIA



# RADIOTRON 1K5-G

AVERAGE TRIODE CHARACTERISTICS

1K5-G  
SHEET 5

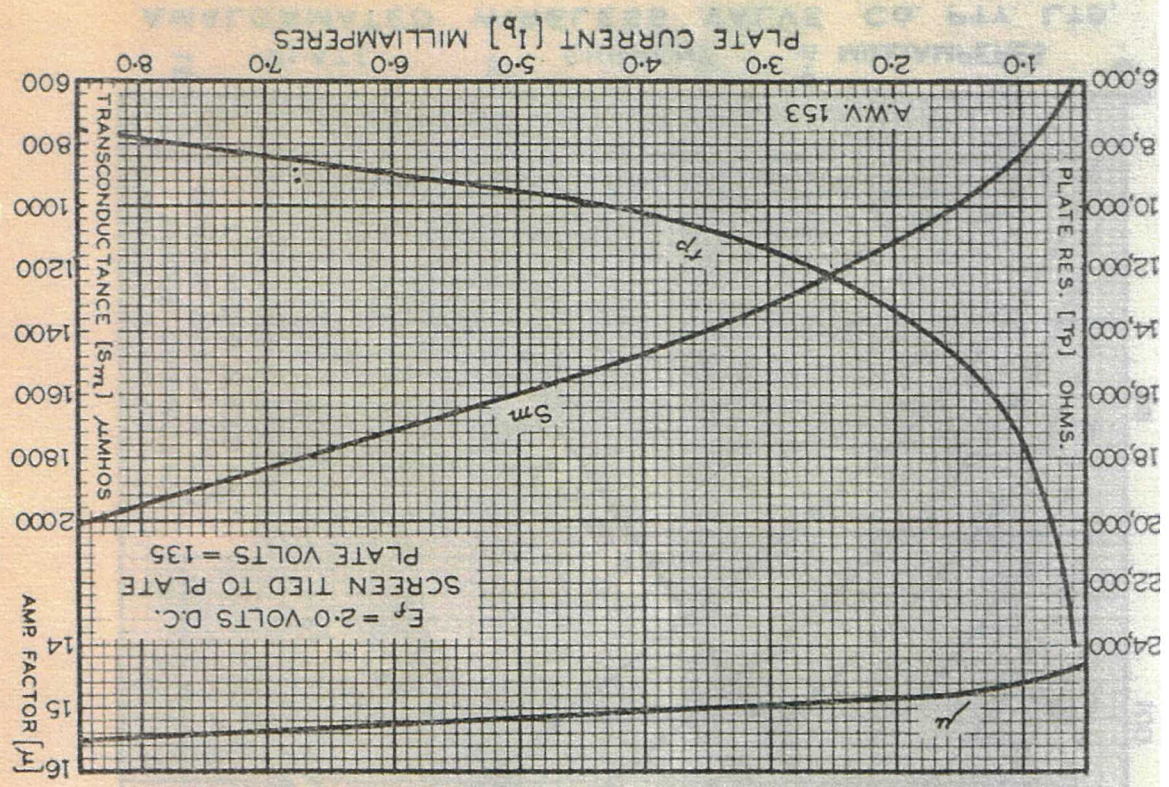
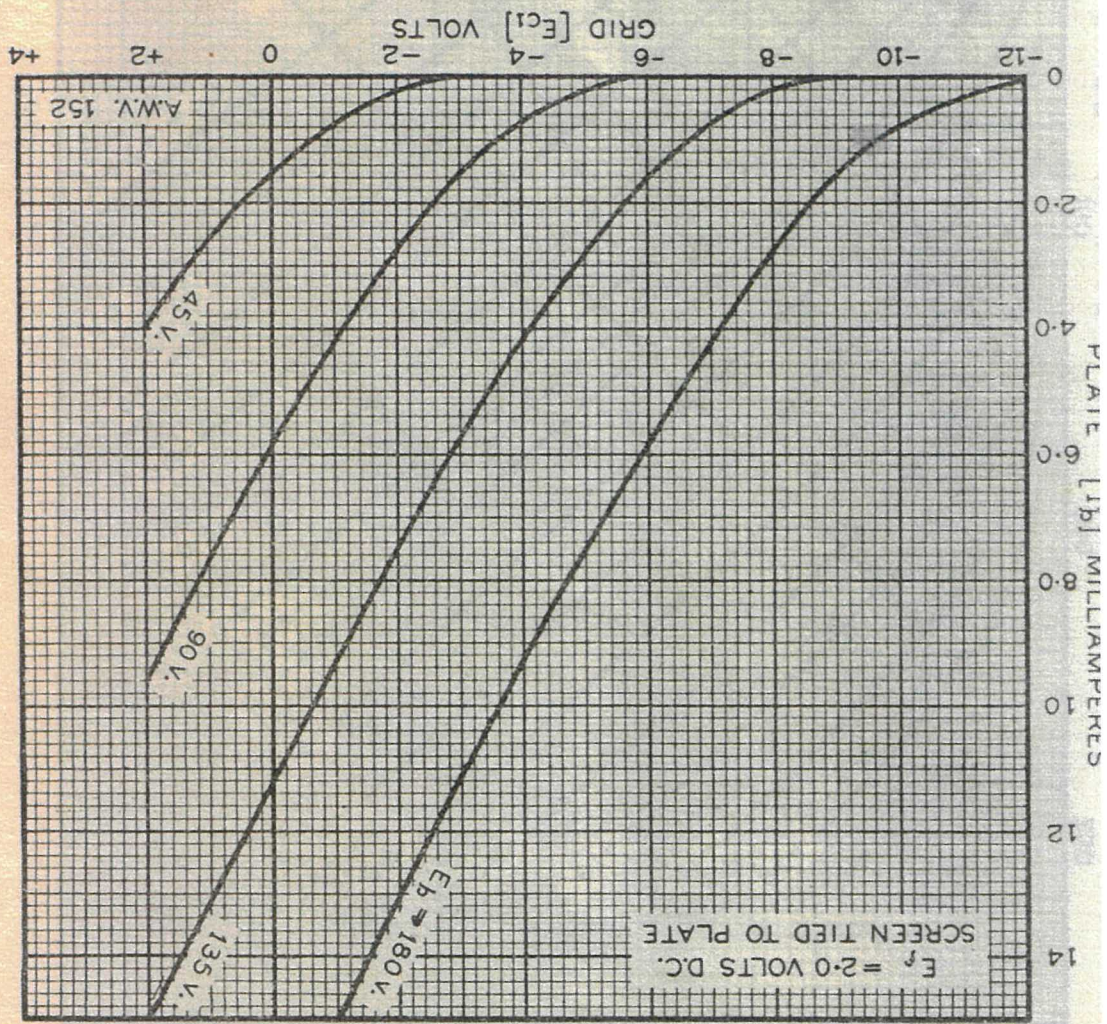


15 PLATE CURRENT 5.0 MILLIAMPERES 10  
 AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
 SYDNEY, AUSTRALIA  
 DECEMBER, 1940

# RADIOTRON

1K5-G

AVERAGE TRIODE CHARACTERISTICS



# RADIOTRON

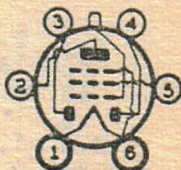
## 1K6

1K6  
1K7-G  
SHEET 1

### DUO-DIODE PENTODE

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Maximum Overall Length		4-15/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Small Metal
Mounting Position		Any

Base		Small 6-Pin
Pin 1-Filament +		Pin 4-Diode Plate #1
Pin 2-Plate		Pin 5-Screen
Pin 3-Diode Plate # 2		Pin 6-Filament -
		Cap -Grid



BOTTOM VIEW (6WA)

Maximum Ratings, Interelectrode Capacitances, Typical Operating Conditions and Curves are the same as for type 1K7-G. Types 1K6 and 1K7-G are identical electrically.

# RADIOTRON

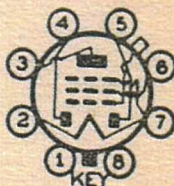
## 1K7-G

### DUO-DIODE PENTODE

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Direct Interelectrode Capacitances - Pentode Unit <sup>*</sup> :		
Grid to Plate	0.015 max.	μμF.
Input	5.0	μμF.
Output	10.5	μμF.

Maximum Overall Length	4-29/32"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap	Skirted Miniature
Mounting Position	Any

Base		Small Shell Octal 8-Pin
Pin 1-No Connection		Pin 6-Pentode Screen
Pin 2-Filament +		Pin 7-Filament -
Pin 3-Pentode Plate		Pin 8-No Connection
Pin 4-Diode Plate # 2		Cap -Pentode Grid
Pin 5-Diode Plate # 1		



BOTTOM VIEW (G-7AE)

Diode Plate # 2 is at positive end of filament; Diode Plate # 1 is at negative end of filament.

\* With shield-can connected to negative filament terminal.

1K7-G

# RADIOTRON

## 1K7-G

### DUO-DIODE PENTODE

(continued from preceding page)

#### AMPLIFIER - Class A<sub>1</sub> (Pentode Connection)

Plate Voltage					180 max. volts
Screen Voltage					135 max. volts
Screen Supply Voltage					180 max. volts
Plate Dissipation					0.35 max. watt
Screen Dissipation					0.07 max. watt
Typical Operation:-					
Filament Voltage	2.0	2.0	2.0	2.0	d-c volts
Plate Voltage	135	135	135	135	volts
Screen Voltage	45	67.5	90	135	volts
Grid Voltage*	0	0	-3	-4.5	volts
Plate Current	0.9	1.8	0.9	1.5	mA.
Screen Current	0.35	0.7	0.35	0.5	mA.
Plate Resistance (approx.)	2.0	1.25	2.0	1.4	megohm
Transconductance	620	800	600	700	μmhos

#### AMPLIFIER - Class A<sub>1</sub> (Triode Connection).#

Plate Voltage					180 max. volts
Plate & Screen Dissipation (total)					0.7 max. watt
Typical Operation:-					
Filament Voltage	2.0	2.0			d-c volts
Plate Voltage	135	180			volts
Grid Voltage*	-4.5	-6			volts
Plate Current	2.0	3.5			mA.
Plate Resistance	16500	15000			ohms
Transconductance	900	1000			μmhos
Amplification Factor	15	15			
Load Resistance	30000	40000			ohms
Total Harmonic Distortion	5	5			%
Power Output	38	60			approx. mW.

\* Negative Filament Return. The grid circuit resistance should not exceed 3 megohms except under resistance coupled conditions.

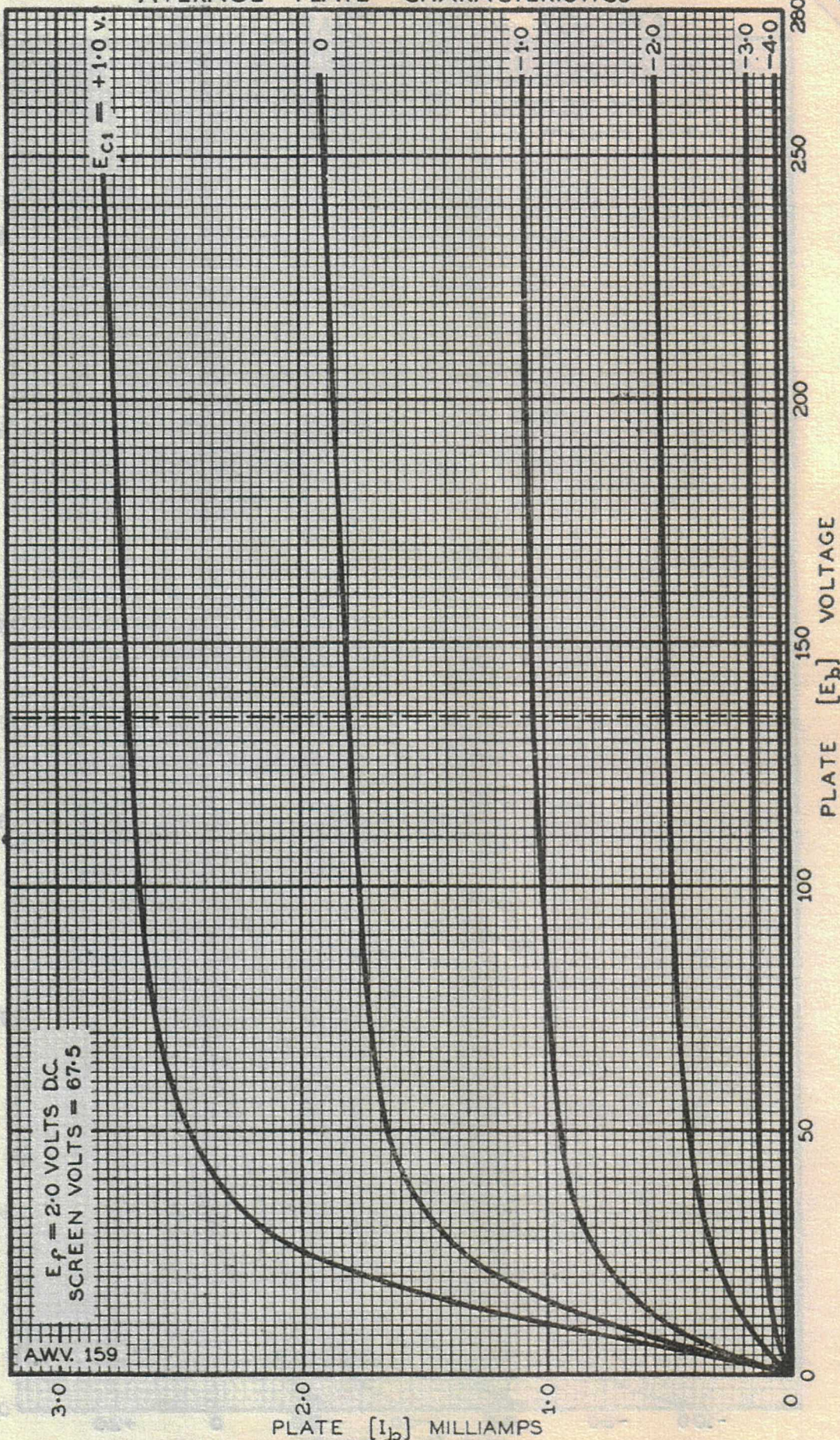
# Screen connected to plate.

# RADIOTRON

1K7-G

## AVERAGE PLATE CHARACTERISTICS

1K7-G  
SHEET



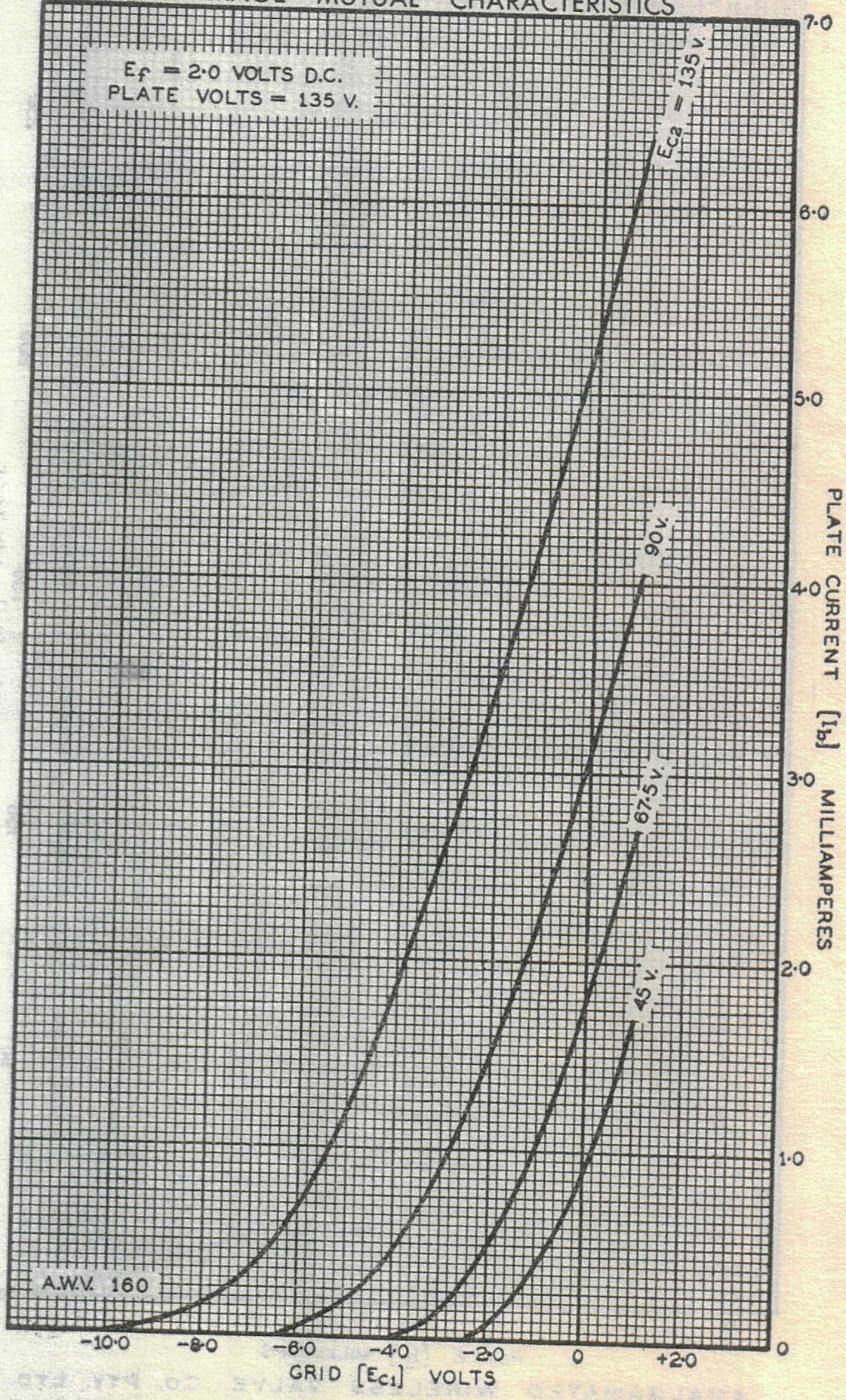
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
JUNE 1941 SYDNEY, AUSTRALIA

1K7-G

# RADIOTRON

1K7-G

## AVERAGE MUTUAL CHARACTERISTICS



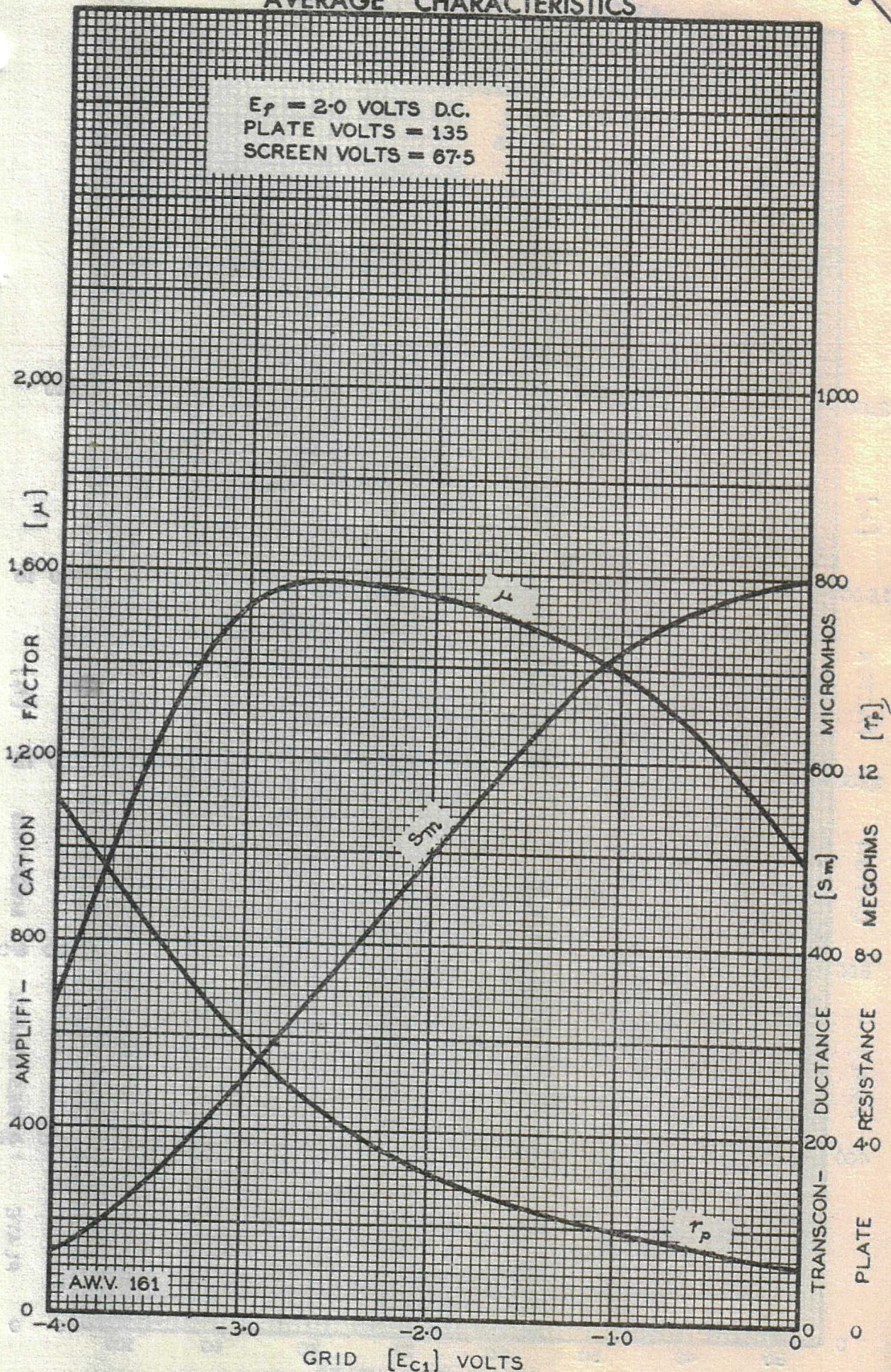
# RADIOTRON

## 1K7-G

### AVERAGE CHARACTERISTICS

1K7-G  
SHEET 3

$E_f = 2.0$  VOLTS D.C.  
PLATE VOLTS = 135  
SCREEN VOLTS = 67.5



AWV. 161  
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
JUNE 1941  
SYDNEY, AUSTRALIA

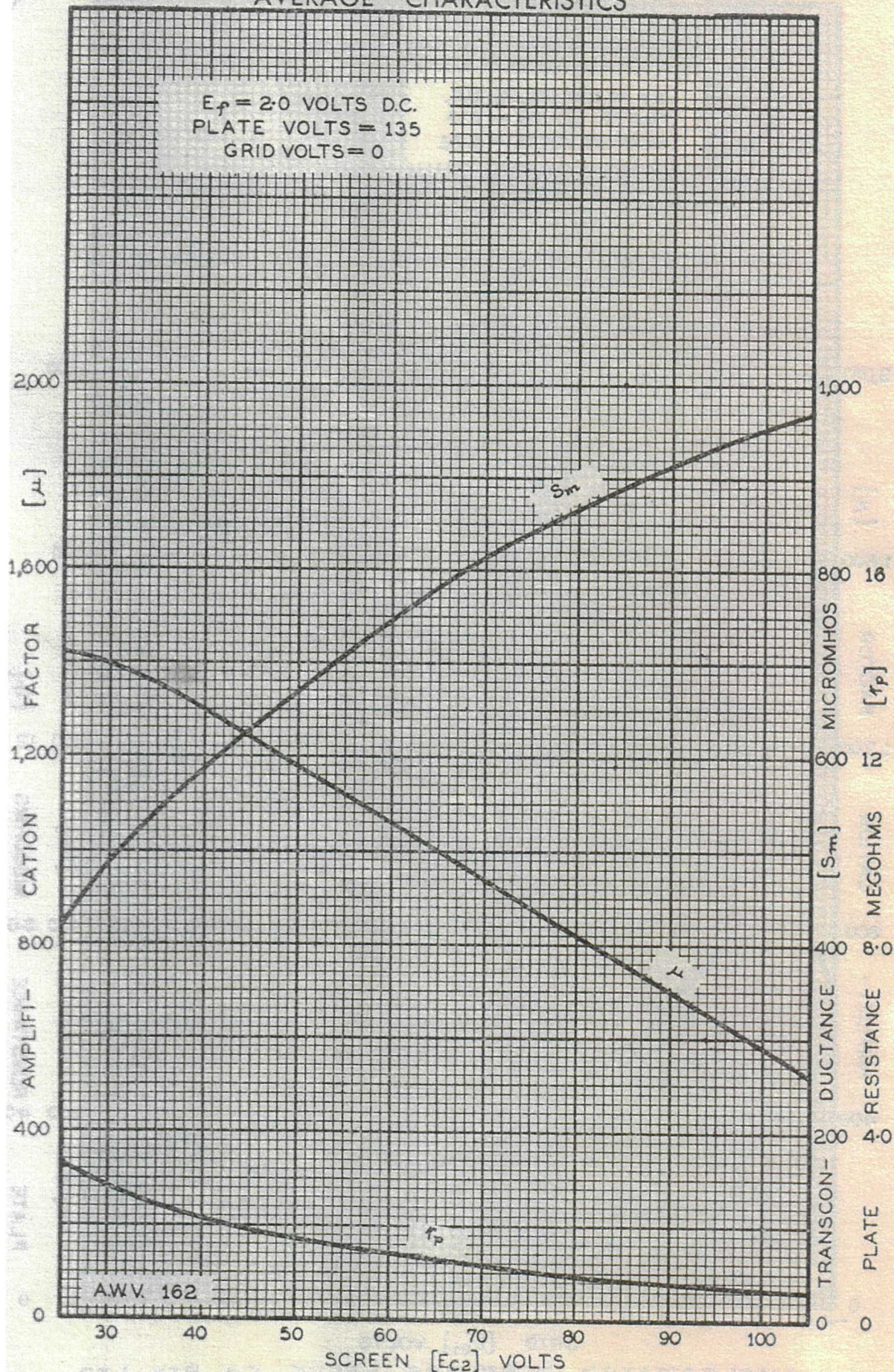
1K7-G

# RADIOTRON

1K7-G

## AVERAGE CHARACTERISTICS

$E_p = 2.0$  VOLTS D.C.  
PLATE VOLTS = 135  
GRID VOLTS = 0



AWV 162

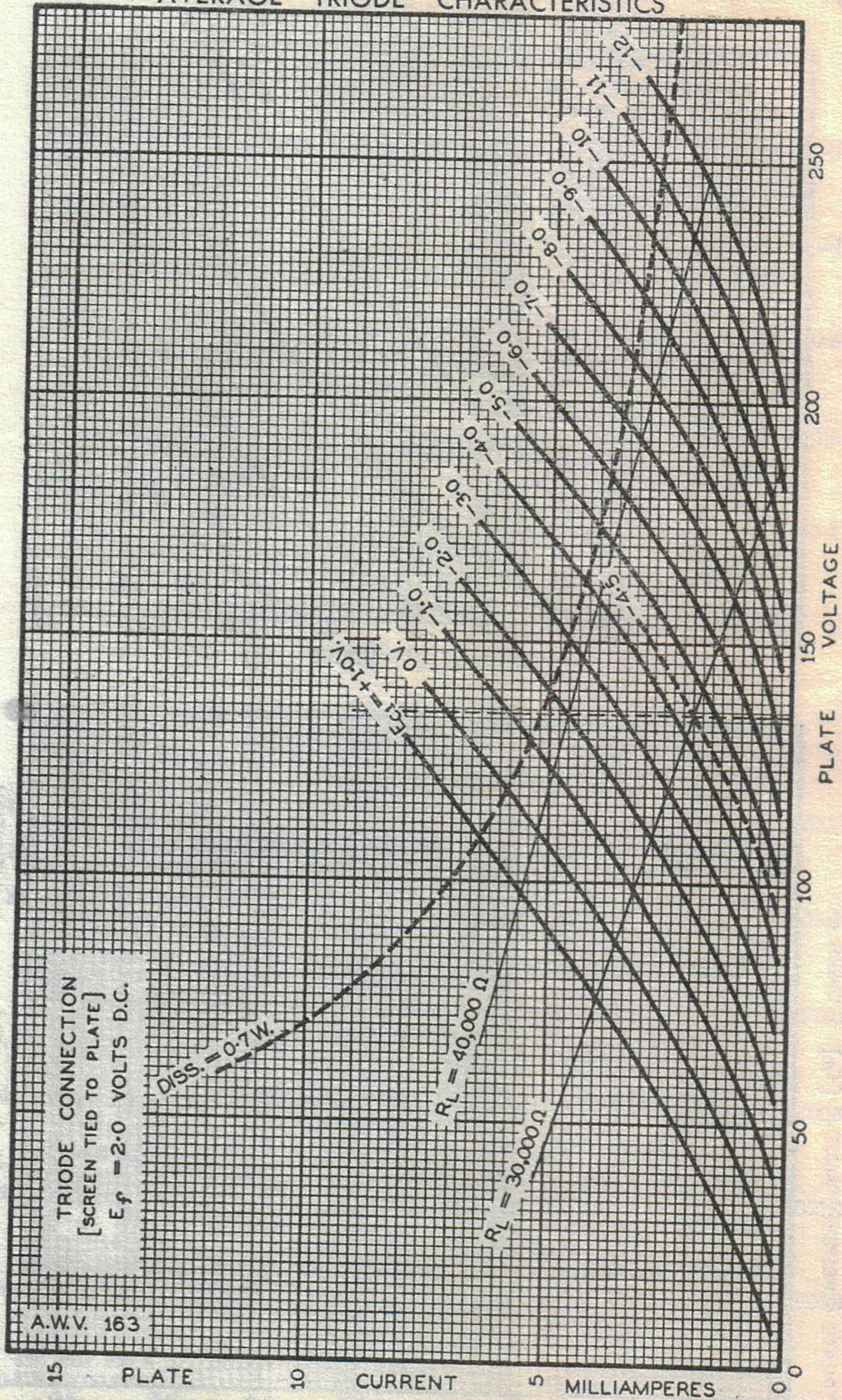
AWV 162  
RADIOTRON 1K7-G  
ELECTRONIC TUBES  
MILWAUKEE, WISCONSIN

# RADIOTRON

1K7-G

## AVERAGE TRIODE CHARACTERISTICS

1K7-G  
SHEET 4

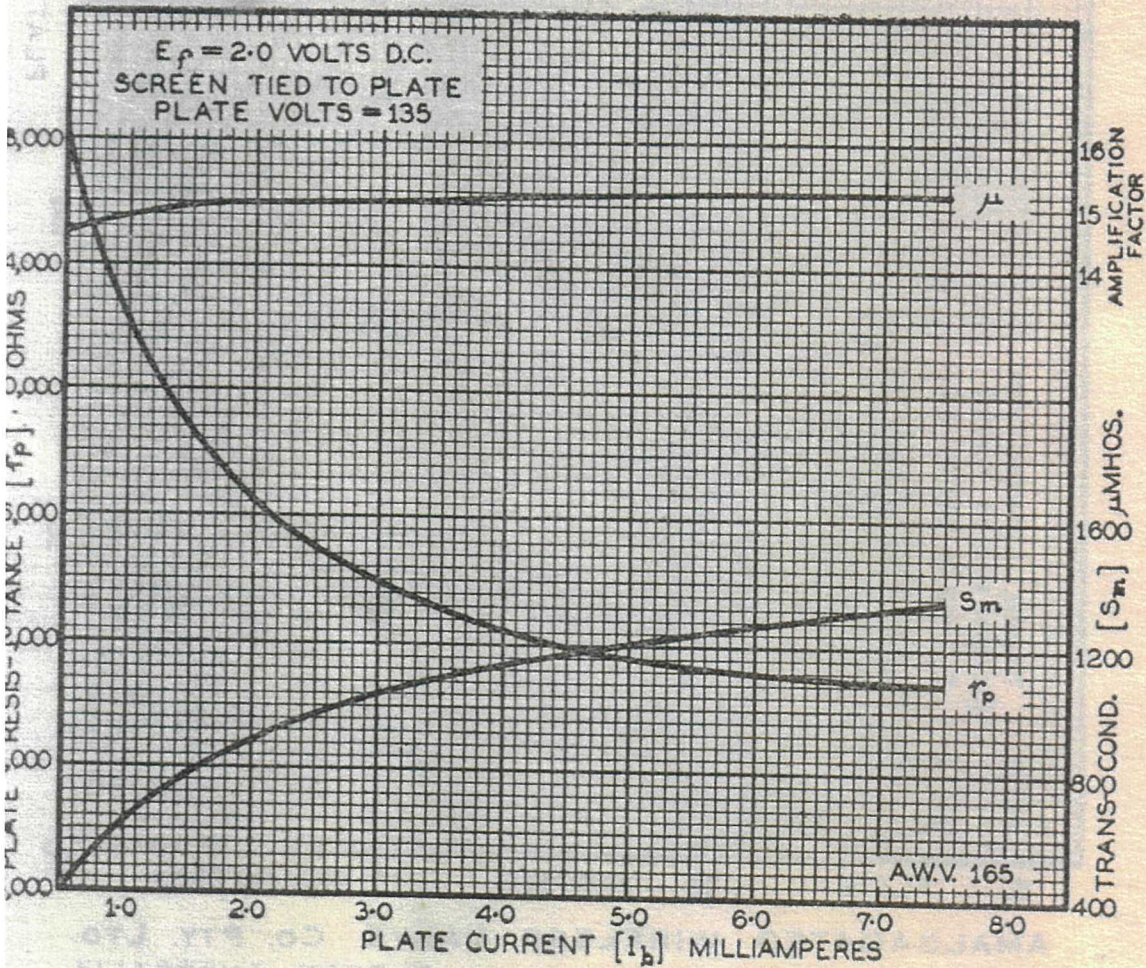
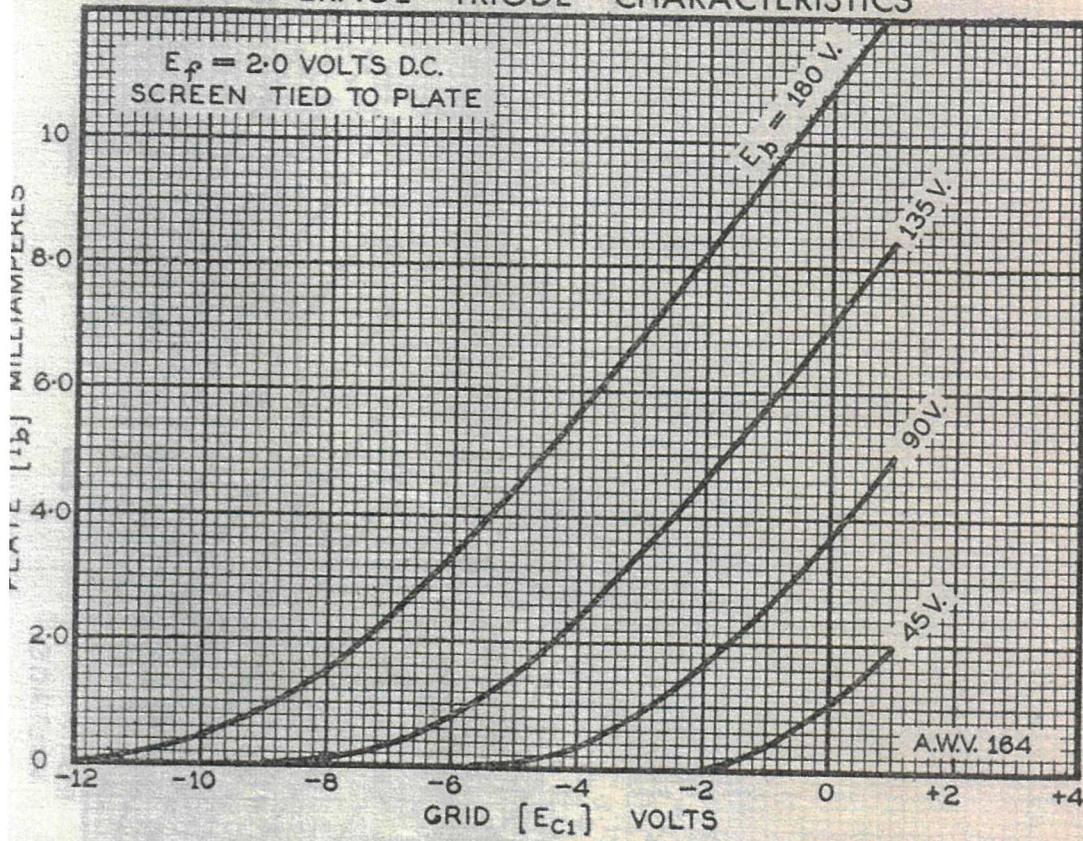


AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
JUNE 1941  
SYDNEY, AUSTRALIA

# RADIOTRON

1K7-G

## AVERAGE TRIODE CHARACTERISTICS



# RADIOTRON

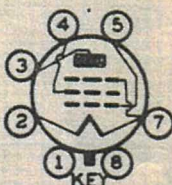
1L5-G

1L5-G



## POWER AMPLIFIER PENTODE

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.24	amp.
Direct Interelectrode Capacitances		
Pentode Connection:-		
Grid to Plate	1.0	$\mu\mu\text{F.}$
Input	8.0	$\mu\mu\text{F.}$
Output	11.0	$\mu\mu\text{F.}$
Triode Connection#:-		
Grid to Plate	2.6	$\mu\mu\text{F.}$
Input	6.4	$\mu\mu\text{F.}$
Output	13.7	$\mu\mu\text{F.}$
Maximum Overall Length		4-21/32"
Maximum Diameter		1-13/16"
Bulb		ST-14
Mounting Position		Vertical, Base Down
Base		Medium Shell Octal 7-Pin
Pin 1-No Connection		Pin 5-Grid
Pin 2-Filament +		Pin 7-Filament -
Pin 3-Plate		Pin 8-No Connection
Pin 4-Screen		



BOTTOM VIEW (G-6X)

### AMPLIFIER - CLASS A<sub>1</sub> (Pentode Connection)

Plate Voltage		180 max.	volts
Screen Voltage		180 max.	volts
Plate Dissipation		1.8 max.	watts
Screen Dissipation		0.5 max.	watt
Typical Operation:			
Filament Voltage	2.0	2.0	2.0 d-c volts
Plate Voltage	90	135	180 volts
Screen Voltage	90	135	180 volts
Grid Voltage*	-2.5	-4.5	-6.0 volts
Cathode Resistor	555	600	508 ohms
Peak A-F Grid Voltage	-2.75	-4.75	-6.25 volts
Plate Resistance (approx.)	0.175	0.15	0.137 megohm
Transconductance	1830	2150	2400 $\mu\text{mhos}$
Zero-Sig. Plate Current	3.6	6.0	9.5 mA.
Max.-Sig. Plate Current	3.6	6.4	9.7 mA.
Zero-Sig. Screen Current	0.9	1.5	2.3 mA.
Max.-Sig. Screen Current	1.5	2.4	4.0 mA.
Load Resistance	25000	15000	15000 ohms
Total Harmonic Distortion	10	10	8 %
Power Output	120	340	750 mW.

### AMPLIFIER - CLASS A<sub>1</sub> (Triode Connection)#

Plate Voltage		180 max.	volts
Plate & Screen Dissipation (total)		2.0 max.	watts
Cathode Current		13.0 max.	mA.
Typical Operation:			
Filament Voltage		2.0 d-c	volts
Plate Voltage		135	volts
Grid Voltage		-6.0	volts
Peak A-F Grid Voltage		6.25	volts
Zero-Sig. Plate Current		4.4	mA.
Max.-Sig. Plate Current		4.7	mA.
Plate Resistance		6750	ohms
Transconductance		1940	$\mu\text{mhos}$
Amplification Factor		13.1	
Load Resistance		12000	ohms
Second Harmonic Distortion		5	%
Power Output		105	mW.

◇ Horizontal operation permitted if pins 2 and 7 are in a vertical plane.

\* Relative to Negative Filament Return. The d-c resistance in the grid circuit should be limited to 1.0 megohm.

# Screen connected to plate.

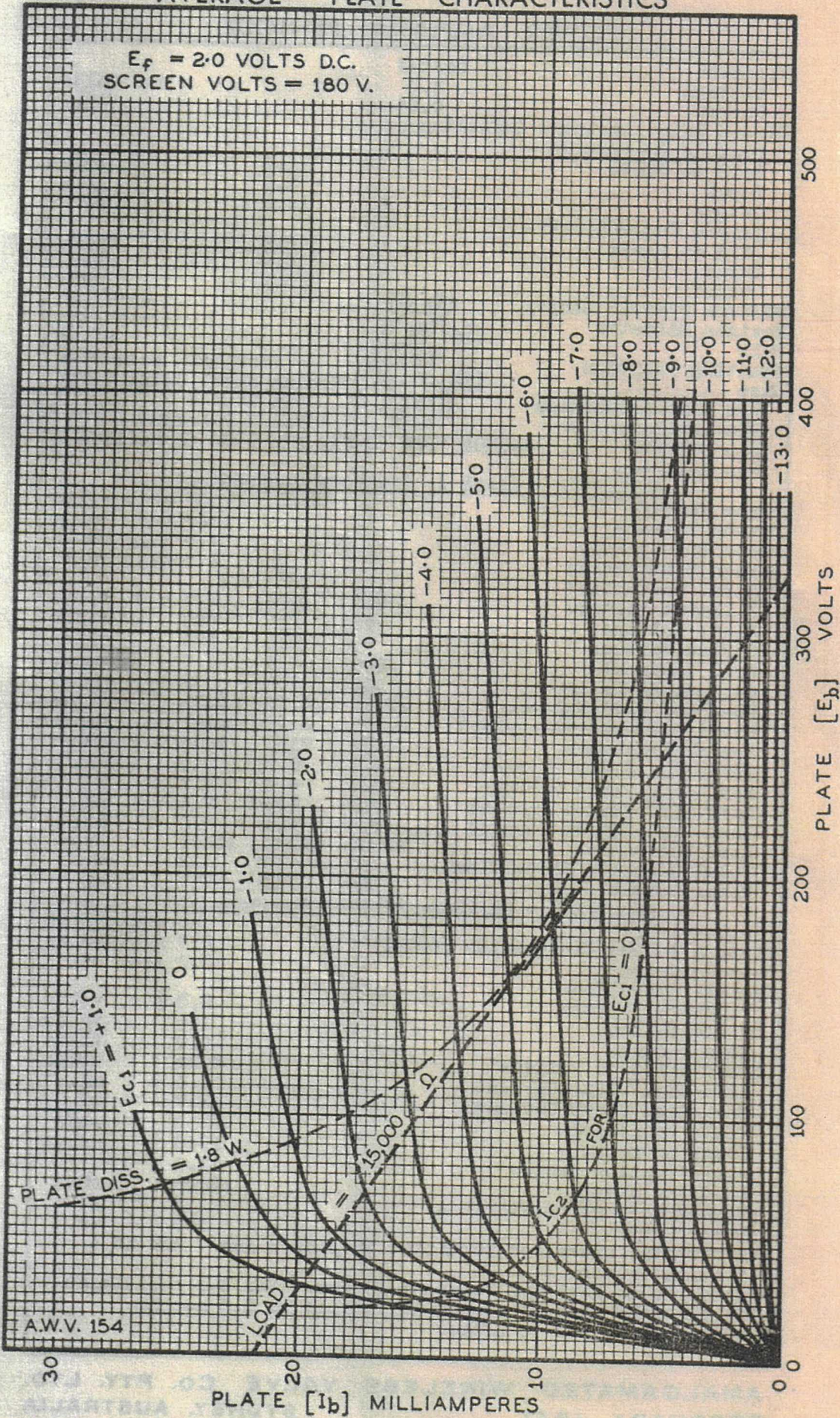
1L5-G

# RADIOTRON

1L5-G

## AVERAGE PLATE CHARACTERISTICS

$E_f = 2.0$  VOLTS D.C.  
SCREEN VOLTS = 180 V.



A.W.V. 154

PLATE  $[I_b]$  MILLIAMPERES

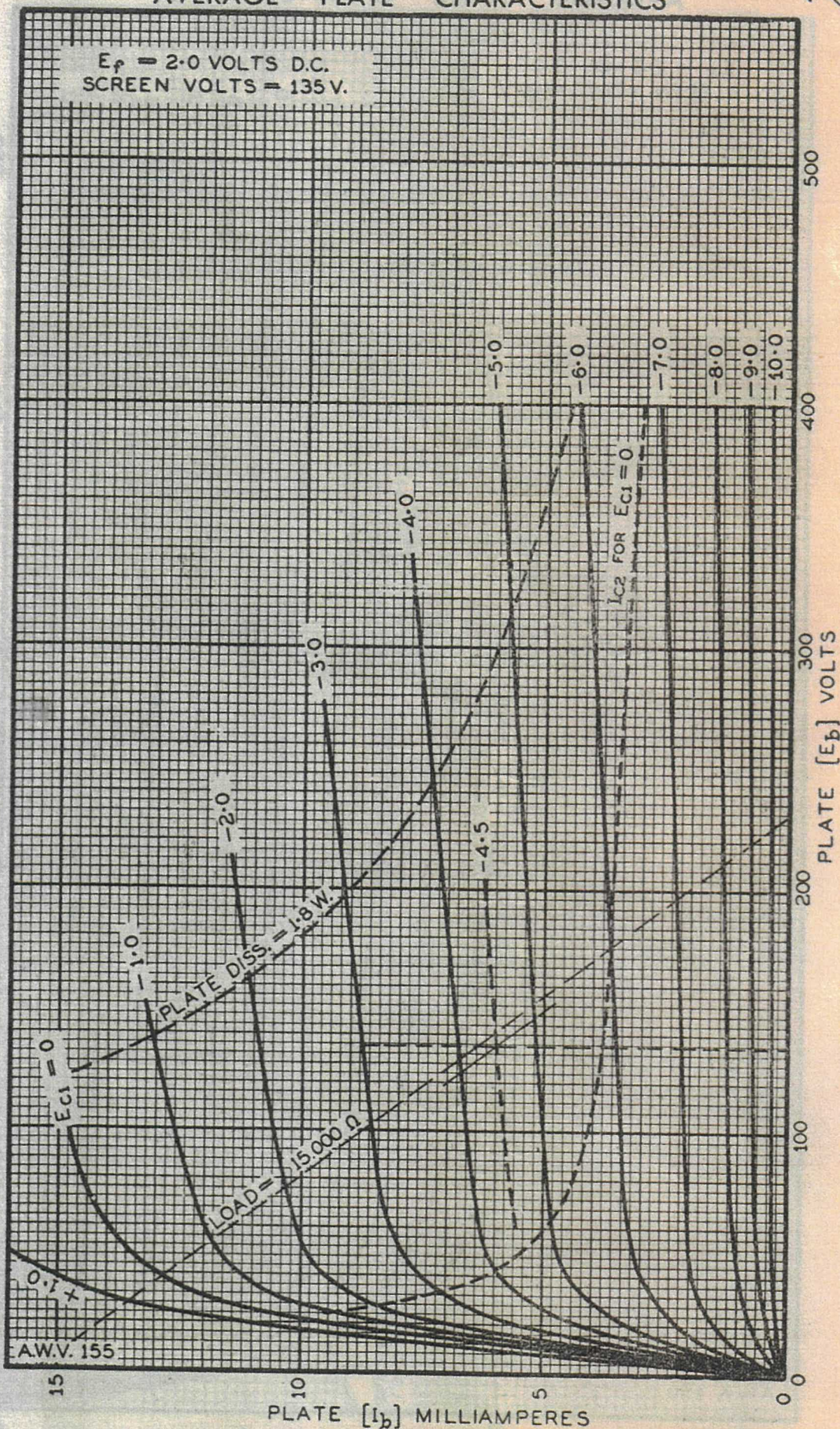
PLATE  $[E_b]$  VOLTS

# RADIOTRON

1L5-G

## AVERAGE PLATE CHARACTERISTICS

1L5-G  
SHEET 2



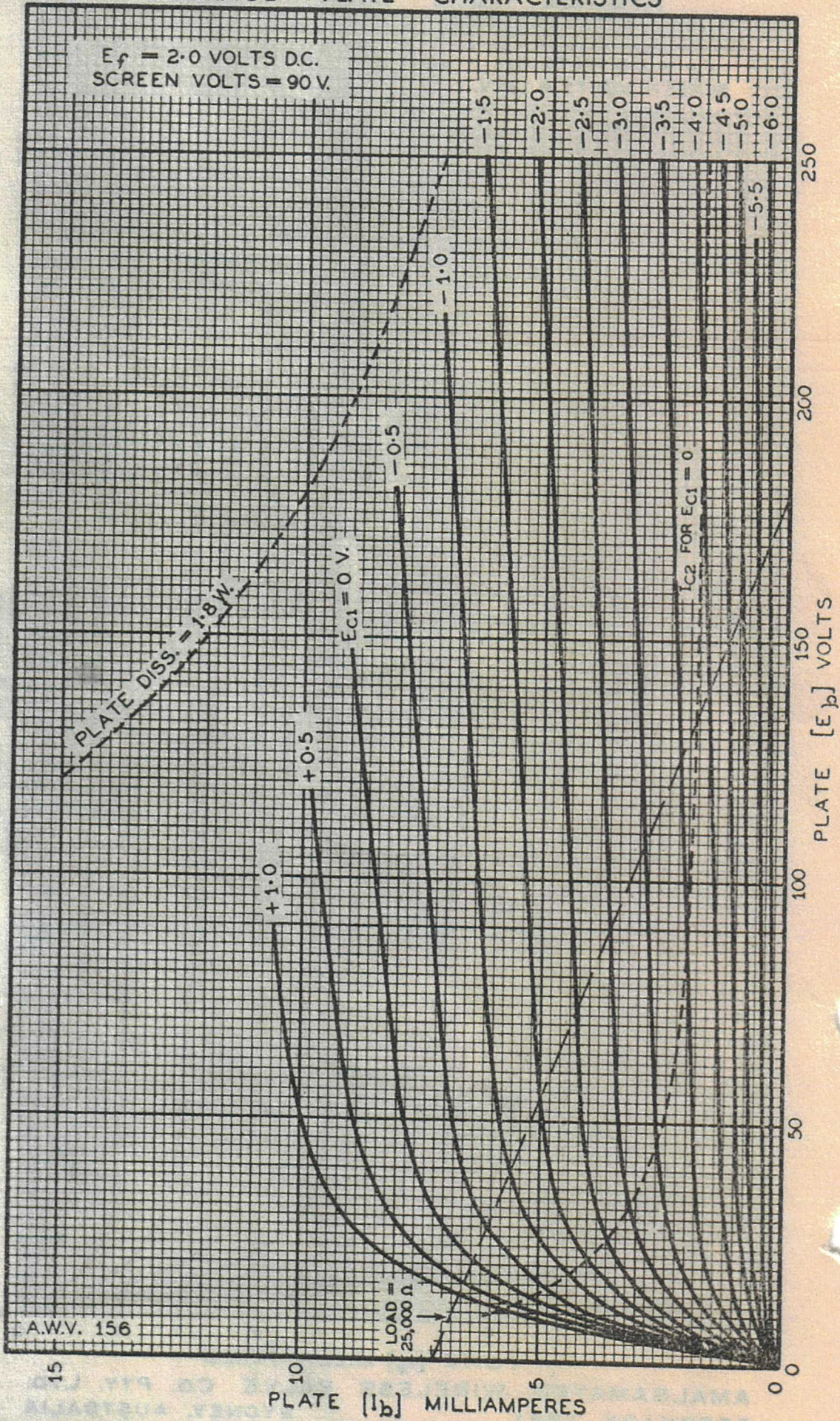
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
FEBRUARY, 1941  
SYDNEY, AUSTRALIA

1L5-G

# RADIOTRON

1L5-G

## AVERAGE PLATE CHARACTERISTICS

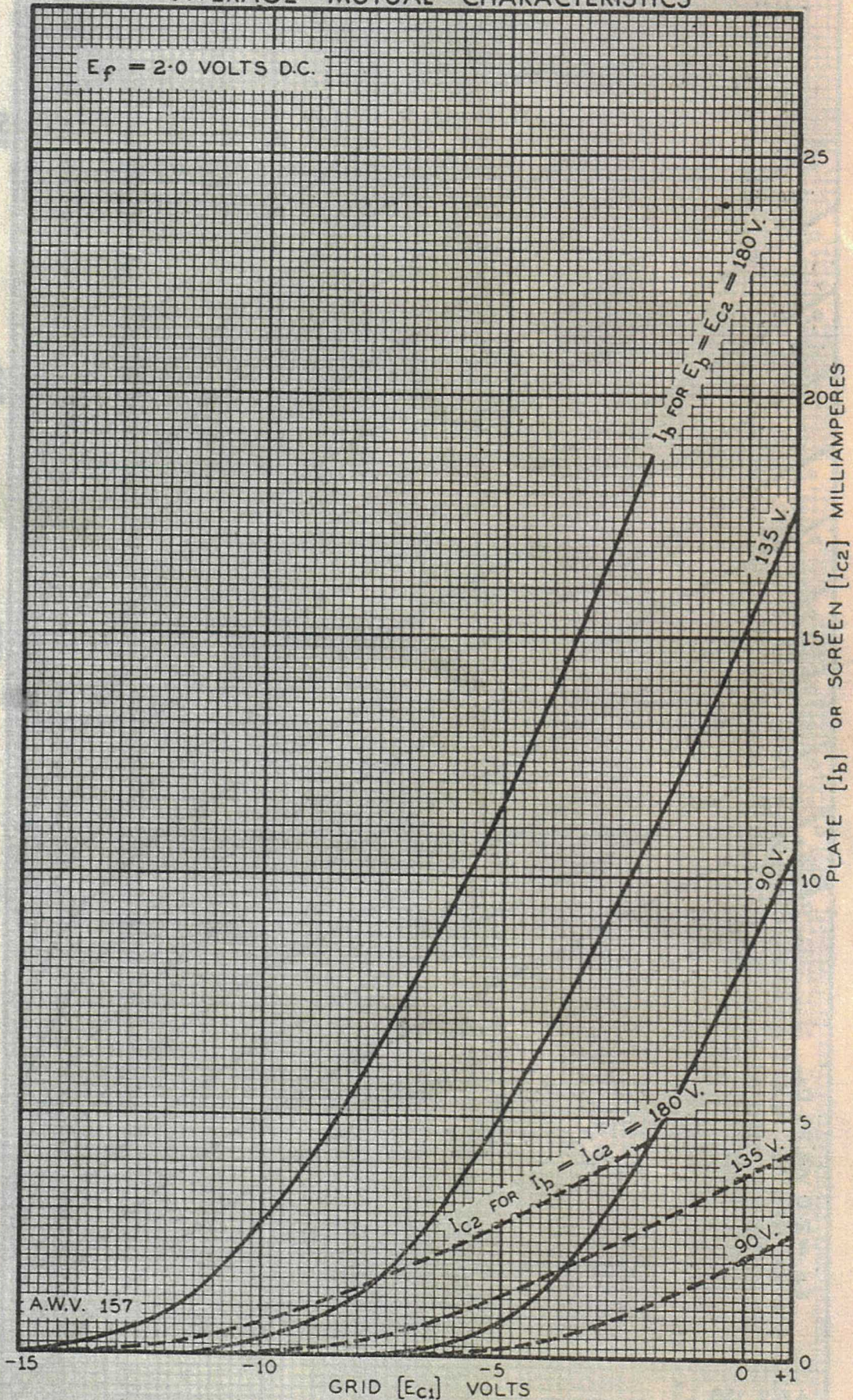


# RADIOTRON

1L5-G

1L5-G  
SHEET 3

## AVERAGE MUTUAL CHARACTERISTICS



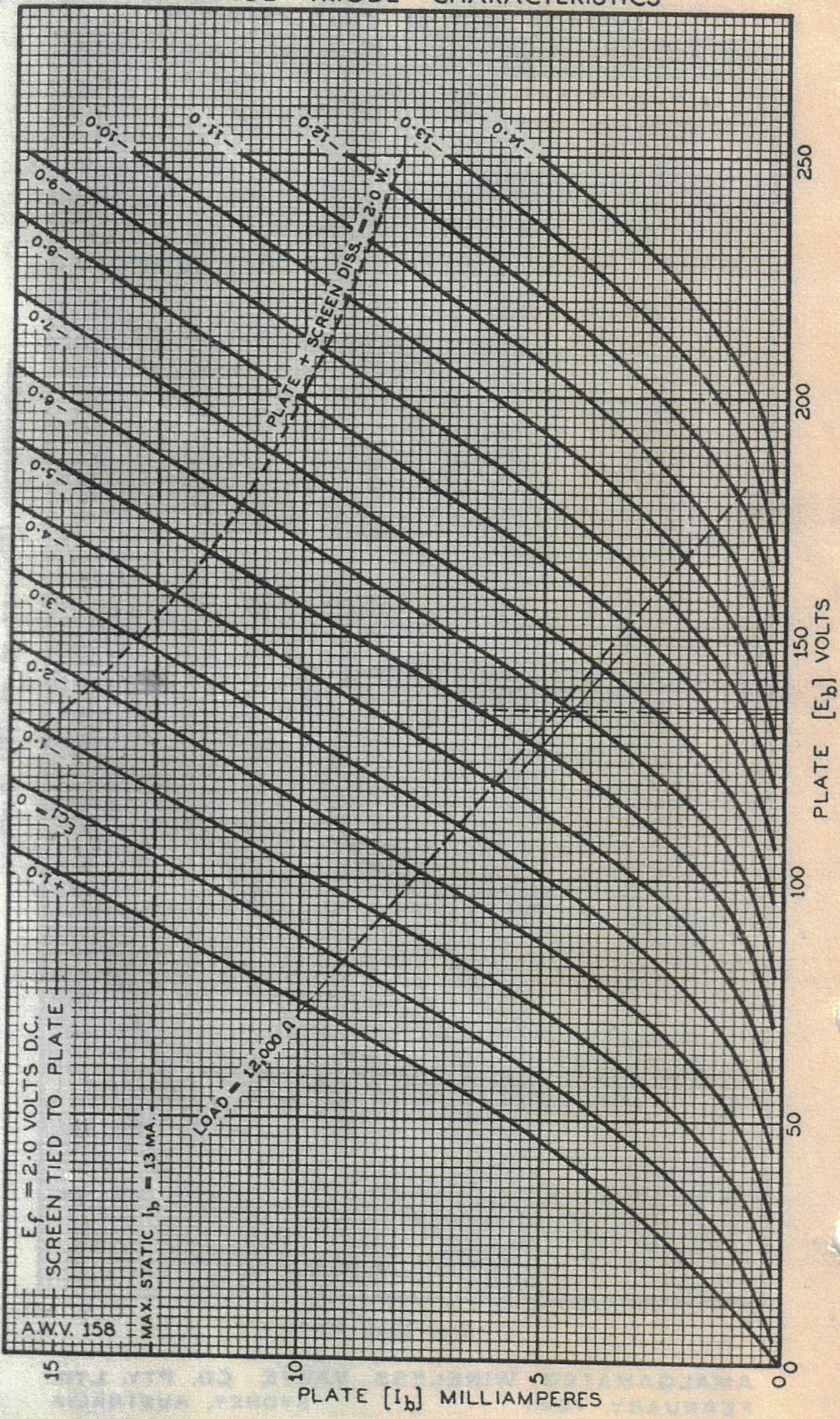
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
FEBRUARY, 1941  
SYDNEY, AUSTRALIA

1L5-G

# RADIOTRON

1L5-G

## AVERAGE TRIODE CHARACTERISTICS



# RADIOTRON

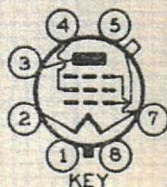
## 1M5-G

 1M5-G  
SHEET 1


### SUPER CONTROL R.F. AMPLIFIER PENTODE

Filament	Coated		
Voltage	2.0		d-c volts
Current	0.12		amp.
Direct Interelectrode Capacitances*:			
Grid to Plate	0.010	max.	$\mu\mu\text{F.}$
Input	6.0		$\mu\mu\text{F.}$
Output	9.5		$\mu\mu\text{F.}$
Maximum Overall Length			4-29/32"
Maximum Diameter			1-9/16"
Bulb			ST-12
Cap			Skirted Miniature
Mounting Position			# Vertical

Base		Small Shell Octal 7-Pin
Pin 1-No Connection		Pin 5-No Connection
Pin 2-Filament +		Pin 7-Filament -
Pin 3-Plate		Pin 8-No Connection
Pin 4-Screen		Cap -Grid



KEY

BOTTOM VIEW (G-5Y)

#### AMPLIFIER - Class A<sub>1</sub>

Plate Voltage		180 max. volts
Screen Voltage		90 max. volts
Screen Supply Voltage		180 max. volts
Grid Voltage		0 min. volts
Plate Dissipation		0.5 max. watt
Screen Dissipation		0.1 max. watt

#### Typical Operation:

Filament Voltage	2.0	2.0	2.0	2.0	d-c	volts
Plate Voltage	135	135	135	135		volts
Screen Voltage	30	45	67.5	90		volts
Grid Voltage <sup>Δ</sup>	0	0	0	-3		volts
Plate Current	0.65	1.25	2.5	1.5		mA.
Screen Current	0.25	0.5	0.9	0.5		mA.
Plate Resistance (approx)	2.54	1.56	0.8	1.85		megohms
Transconductance	600	780	1000	700		$\mu\text{mhos}$
Transconductance <sup>○</sup>	-	-	4	-		$\mu\text{mhos}$

\* With shield-can connected to negative filament terminal.

# Horizontal operation permitted if plane of filament is vertical.

Δ Negative filament return. The grid circuit resistance should not exceed 3 megohms for a single controlled stage, 2.5 megohms for two controlled stages, or 2 megohms for three controlled stages.

○ For a negative grid bias of -16.0 volts.

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

JULY 1941

SYDNEY, AUSTRALIA

1M5-G

# RADIOTRON

1M5-G

## PLATE CHARACTERISTICS

$E_f = 2.0$  VOLTS D.C.  
SCREEN VOLTS = 67.5V.

$E_{c1} = 0$  V.  
+0.2  
-0.2

-1.0

-2.0

-3.0

-4.0

-6.0

-8.0

-10

-15

250

200

150

100

50

PLATE  $[E_b]$  VOLTAGE

A.W.V. 166

3.0

PLATE

2.0

$[I_p]$

1.0

MILLIAMPS

0

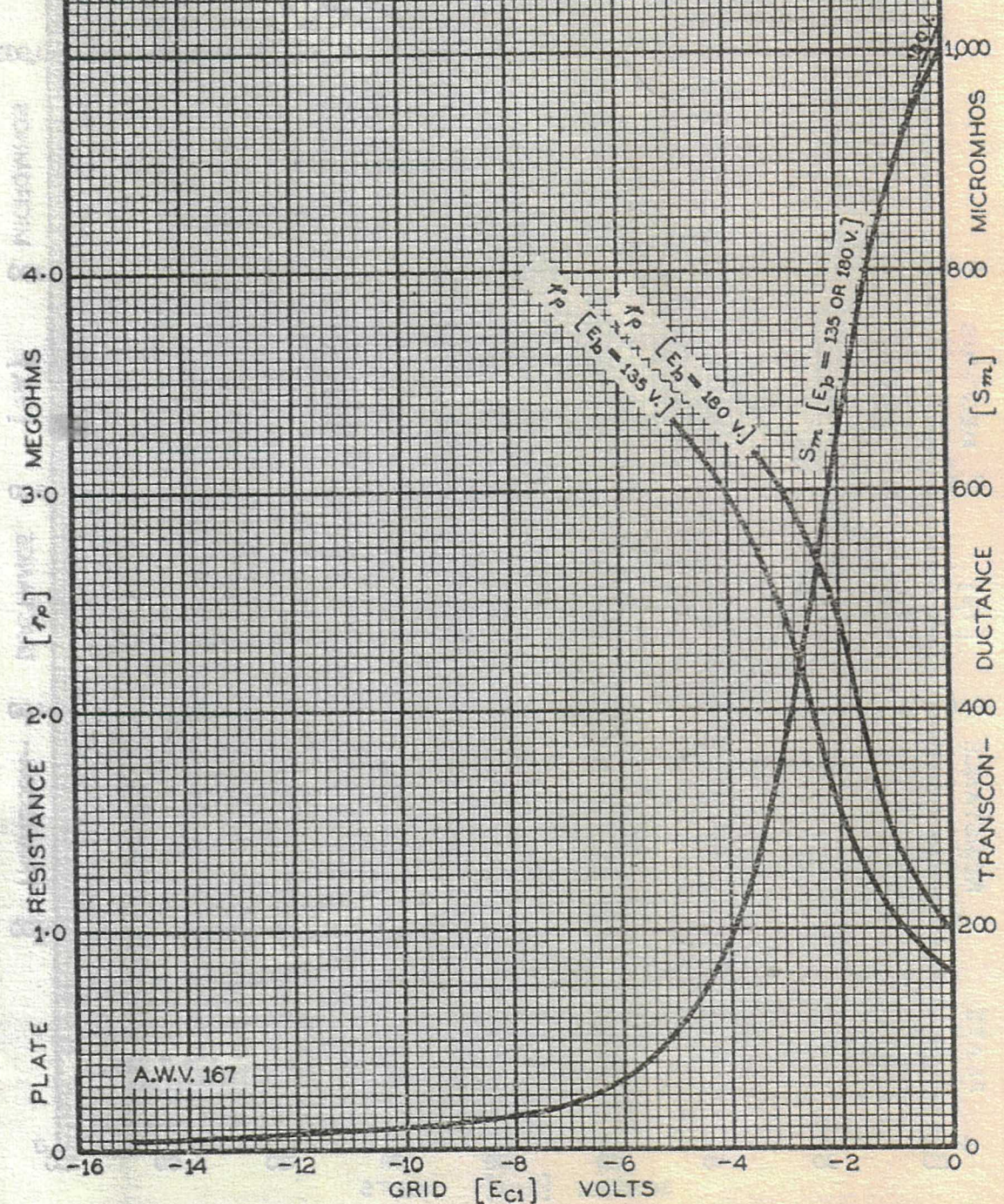
# RADIOTRON

1M5-G

## AVERAGE CHARACTERISTICS

1M5-G  
SHEET 2

$E_f = 2.0$  VOLTS D.C.  
SCREEN VOLTS = 67.5



A.W.V. 167

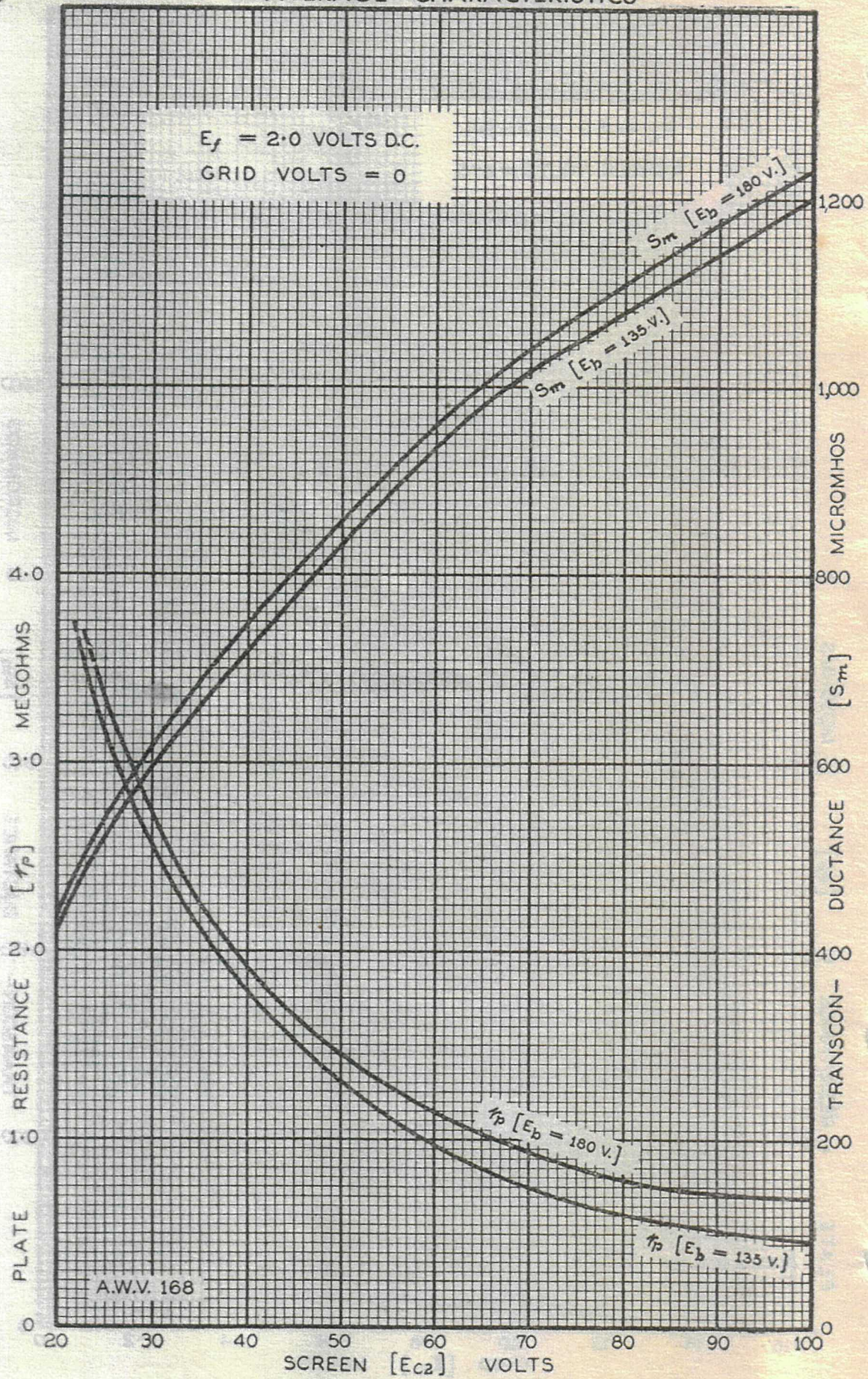
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
JULY 1941 SYDNEY, AUSTRALIA

1M5-G

# RADIOTRON

1M5-G  
AVERAGE CHARACTERISTICS

$E_f = 2.0$  VOLTS D.C.  
GRID VOLTS = 0



A.W.V. 168

AMERICAN ELECTRONIC CORP. 1000 WILSON AVENUE, BOSTON, MASS. U.S.A.

# RADIOTRON

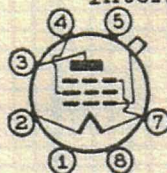
## 1N5-GT

 1N5-GT  
SHEET 1  
★

### R. F. AMPLIFIER PENTODE

As an R - F or I.F. amplifier, type 1N5-GT may usually be replaced directly by type 1P5-GT without affecting the performance of a receiver. Type 1P5-GT draws somewhat greater plate and screen currents than type 1N5-GT but this is only likely to cause difficulty in cases where the screen is fed through a dropping resistor. In such cases it may be desirable to reduce the resistance of the dropping resistor.

Filament	Coated		
Voltage	1.4		d.c. volts
Current	0.05		amp.
Direct Interelectrode Capacitances:			
Grid to Plate ●		.007 max.	μμF.
Input		3.2	μμF.
Output		10.0	μμF.
Maximum Overall Length			3-5/16"
Maximum Diameter			1-5/16"
Bulb			T-9
Cap			Skirted Miniature
Base			Intermediate Shell Octal 7 Pin.
Pin 1-No Connection			Pin 5-No Connection
Pin 2-Filament +			Pin 7-Filament -
Pin 3-Plate			Pin 8-No Connection
Pin 4-Screen			Cap -Grid



BOTTOM VIEW (G-5Y)

Mounting Position Any

#### AMPLIFIER - Class A<sub>1</sub> (Pentode Connection)

Plate Voltage	90	max.	volts
Screen Voltage	90	max.	volts
Typical Operation:-			
Filament Voltage	1.4	d.c.	volts
Plate Voltage	90		volts
Screen Voltage	90		volts
Grid Voltage *	0		volts
Plate Current	1.2		mA.
Screen Current	0.3		mA.
Plate Resistance (approx.)	1.5		megohm
Transconductance	750		μmhos
Transconductance (Eg <sub>1</sub> = -4.0 V.)	5		μmhos

#### AMPLIFIER - Class A<sub>1</sub> (Triode Connection)<sup>#</sup>

Plate Voltage	90	max.	volts
Typical Operation:-			
Filament Voltage	1.4	1.4	d.c. volts
Plate Voltage	90	90	volts
Grid Voltage *	-1.0	0	volts
Plate Current	0.85	1.5	mA.
Plate Resistance	40,000	30,000	ohms
Transconductance	725	1,000	μmhos
Amplification Factor	29	30	

- With shield-can connected to negative filament terminal.  
 ★ Negative filament return. The grid circuit resistance may be as high as 10 megohms provided that the circuit constants are such that the plate current cannot under any circumstances exceed 1.0 mA. As an A.V.C. controlled R.F. amplifier the grid circuit resistance should not exceed 3 megohms for a single stage, 2.5 megohms for two controlled stages or 2 megohms for 3 controlled stages.  
 # Screen connected to plate at socket.

# RADIOTRON

1N5-GT

## AVERAGE PLATE CHARACTERISTICS

$E_f = 1.4$  VOLTS D.C.

SCREEN VOLTS = 90

CONTROL-GRID VOLTS  $E_{c1} = +0.5$

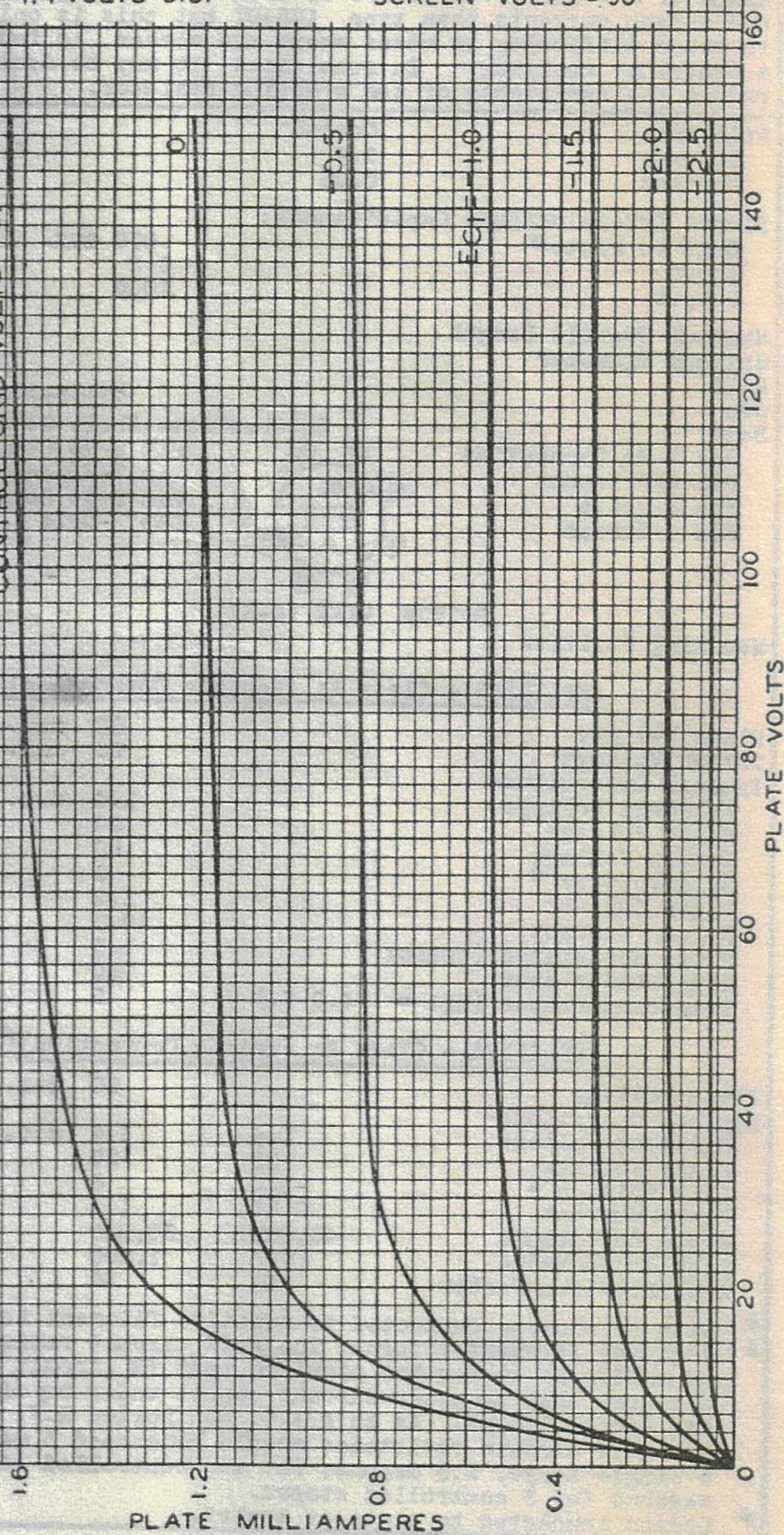


PLATE MILLIAMPERES

PLATE VOLTS

UNIVERSITY MICROFILMS INTERNATIONAL  
SERIALS ACQUISITION  
300 N ZEEB RD  
ANN ARBOR MI 48106  
TEL 734 769 0700  
FAX 734 769 0750  
WWW.UMI.COM

# RADIOTRON

1P5-GT

SUPER CONTROL R.F. AMPLIFIER PENTODE

1P5-GT



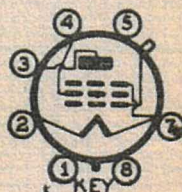
Filament	Coated	
Voltage	1.4	d-c volts
Current	0.05	amp.

Direct Interelectrode Capacitances		
Grid to Plate (with valve shield)	.007 max.	$\mu$ F.
Input	3.2	$\mu$ F.
Output	10.0	$\mu$ F.

Maximum Overall Length	3-5/16"
Maximum Diameter	1-5/16"
Bulb	T-9

Cap Skirted Miniature  
Base Intermediate Shell Octal 7-Pin.

Pin 1 - No Connection  
Pin 2 - Filament +  
Pin 3 - Plate  
Pin 4 - Screen



Pin 5 - No Connection  
Pin 7 - Filament -  
Pin 8 - No Connection  
Cap - Grid

BOTTOM VIEW (G-5Y)

Mounting Position	Any.
-------------------	------

### AMPLIFIER - Class A<sub>1</sub>

Plate Voltage	90	max.	volts
Screen Voltage	90	max.	volts
Typical Operation:-			
Filament	1.4	d-c	volts
Plate Voltage	90		volts
Screen Voltage	90		volts
Grid Voltage *	.0		volts
Plate Current	2.3		ma.
Screen Current	0.7		ma.
Plate Resistance (approx.)	0.8		megohm
Transconductance	800		$\mu$ hos
Transcond. approx. ( $E_{g1} = -12V.$ )	10		$\mu$ hos

\* Negative Filament Return.

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

JULY, 1940

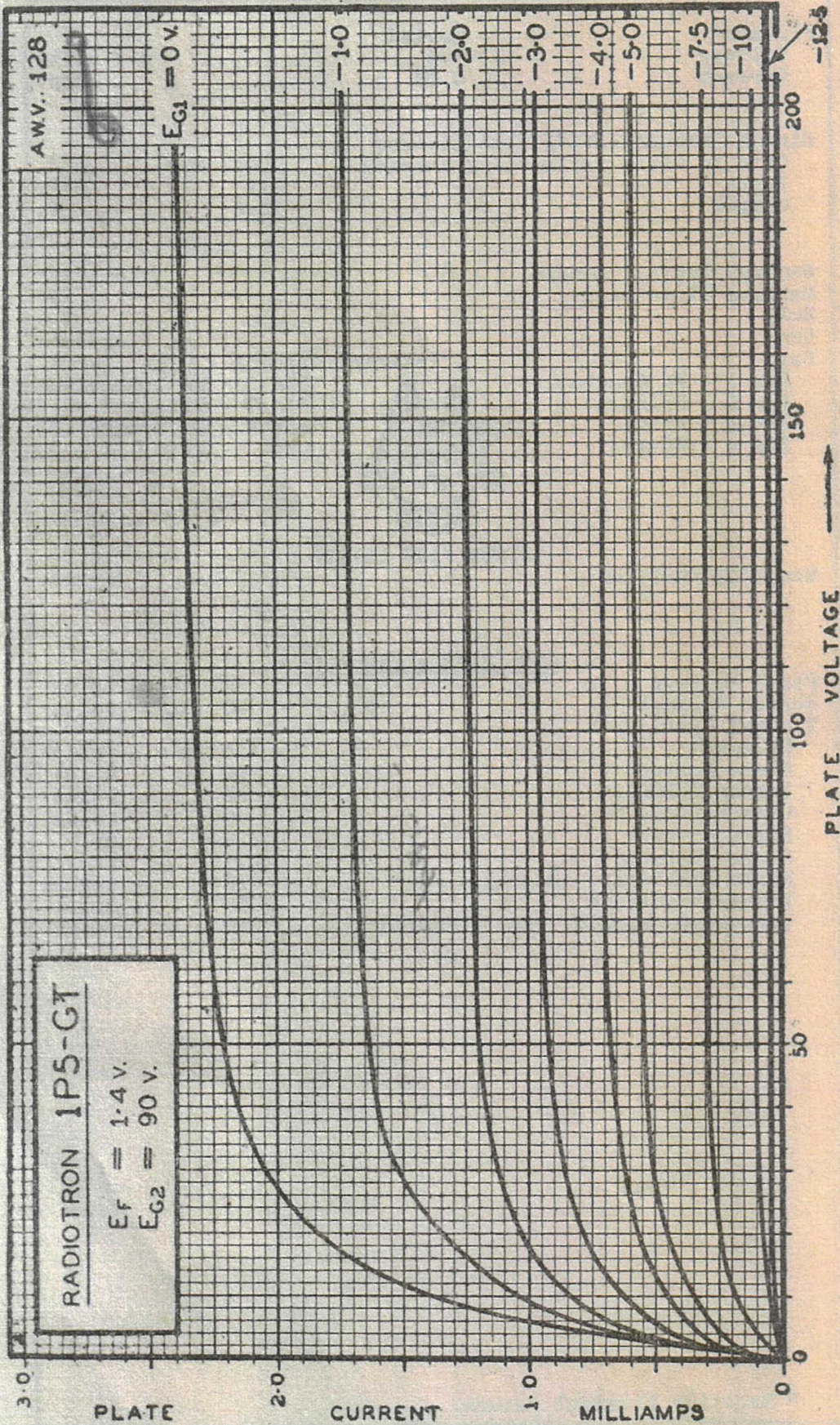
SYDNEY, AUSTRALIA

1P5-GT

# RADIOTRON

1P5-GT

## OPERATION CHARACTERISTICS



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
JULY, 1940 SYDNEY, AUSTRALIA

# RADIOTRON

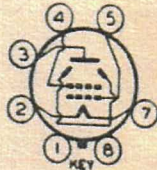
IQ5-GT

IQ5-GT



## BEAM POWER AMPLIFIER

Filament*	Coated	
Voltage	1.4	d-c volts
Current	0.1	amp.
Maximum Overall Length		3-5/16"
Maximum Diameter		1-5/16"
Bulb		T-9
Base		Intermediate Shell Octal 7-Pin
Pin 1 - No Connection		Pin 5 - Grid
Pin 2 - Filament +		Pin 7 - Filament -
Pin 3 - Plate		Pin 8 - No Connection
Pin 4 - Screen		
Mounting Position		Any



BOTTOM VIEW (G-6AF)

### POWER AMPLIFIER - Class A<sub>1</sub>

#### Operating Conditions and Characteristics:

Filament*	1.4	d-c	volts
Plate	90 max.		volts
Screen	90 max.		volts
Grid	-4.5		volts
Transcond.	2100		μmhos
Plate Cur.	9.5		ma.
Screen Cur.	1.6		ma.
Load Res.	8000		ohms
Total Harmonic Distortion	7.5		%
Power Output	270		mW

The filament is designed for operation from a dry battery of which the voltage on load does not exceed 1.54 volts.



885

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**GAS-TRIODE**

Heater	Coated Uni-potential Cathode*	
Voltage	2.5	a-c or d-c volts
Current	1.4	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	3.5	$\mu\text{f}$
Grid to Cathode	3.5	$\mu\text{f}$
Plate to Cathode	2.5	$\mu\text{f}$
Tube Voltage Drop	16	approx. volts
Maximum Overall Length		4-1/4"
Maximum Diameter		1-9/16"
Bulb		ST-12
Base		Small 5-Pin

**SWEEP-CIRCUIT OSCILLATOR SERVICE**

Heater Voltage	2.5	volts
Plate Voltage (Instantaneous)	300 max.	volts
Peak Voltage between any two electrodes	350 max.	volts
Peak Plate Current	300 max.	ma.
Average Plate Current:**		
For frequencies below 200 cycles/sec.	3 max.	ma.
For frequencies above 200 cycles/sec.	2 max.	ma.

Grid Resistor The resistance of the grid resistor should be not less than 1000 ohms per maximum instantaneous volt applied to the grid. Resistance values in excess of 500000 ohms may cause circuit instability.

**GRID-CONTROLLED RECTIFIER SERVICE***For frequencies below 75 cycles per second*

Heater Voltage <sup>o</sup>	2.5	volts
Peak Voltage between any two electrodes	350 max.	volts
Peak Plate Current	300 max.	ma.
Average Plate Current { Averaged over period of not more than 30 sec. }	75 max.	ma.

Grid Resistor The resistance of the grid resistor should be not less than 1000 ohms per maximum instantaneous volt applied to the grid. Resistance values in excess of 500000 ohms may cause circuit instability.

<sup>o</sup> Should be applied for 30 seconds before drawing plate-load current.

\* The cathode should preferably be connected directly to the mid-tap of the heater winding. In circuits where the cathode is not connected directly to the heater, the heater may be made negative with respect to the cathode by a potential difference not to exceed 100 volts provided the peak voltage between any electrode and the heater does not exceed 350 volts.

\*\* Since the average plate current through the 885 is limited to the values shown, it follows that the constant charging current to the condenser  $C_1$ ,  $C_2$ , etc. (see circuit on second following page) is also limited correspondingly. The condenser should be kept as small as practical, consistent with the desired freedom from distortion, in order to keep the average plate current of the 885 low.

(continued on next page)

MAY 1, 1935.

RCA RADIOTRON DIVISION  
RCA MANUFACTURING COMPANY, INC.

DATA



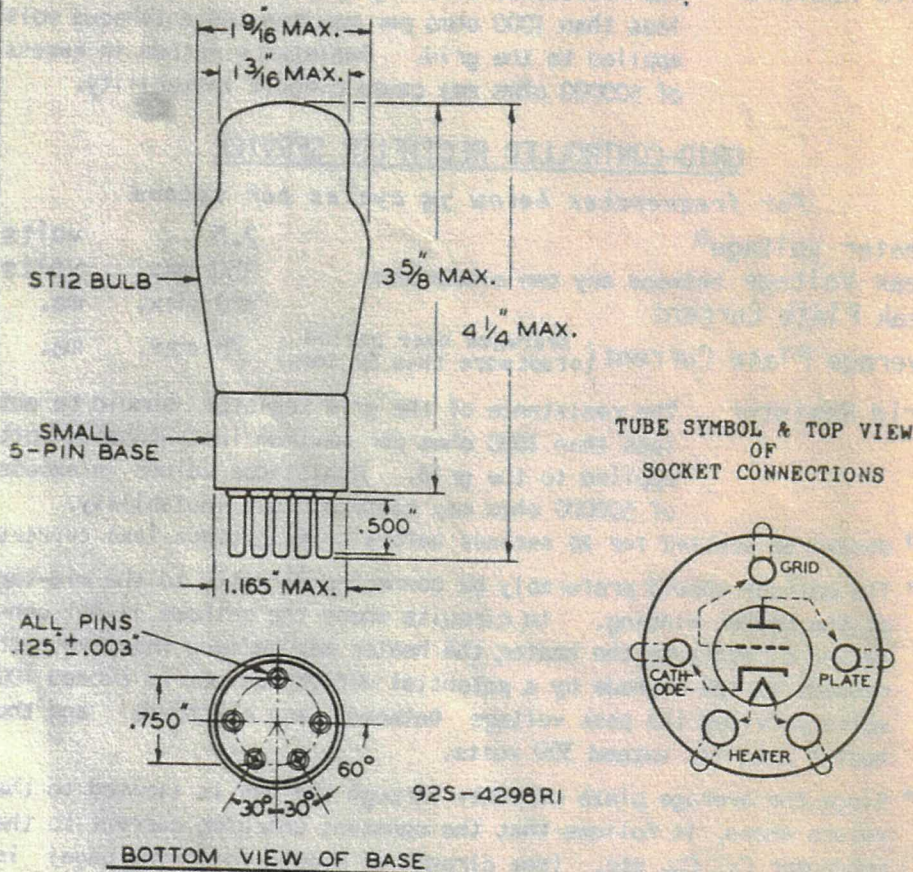
## GAS-TRIODE

(continued from preceding page)

NOTE: The circuit on the next page illustrates the use of a pentode as a current-limiting device to maintain a constant charging current to the condenser  $C_1$ ,  $C_2$ , etc. Resistor  $R_1$  is employed to limit the discharge current to a safe value for the 885.  $R_1$  may be replaced by a suitable inductance  $L$  to give approximately twice the sweep output voltage as explained in the note on the circuit-page.

For sweeps per second above approximately 20000, a condenser may not be necessary because of the capacity of the 885 and its circuit. Very high sweep rates may require the use of an amplifier to provide the desired deflection voltage.

For synchronizing purposes, a voltage of a few volts a.c. (preferably adjustable from zero) is suitable. Any means of introducing this voltage in the grid circuit is satisfactory provided the total effective external grid circuit resistance to both alternating current and direct current is in accord with recommended grid resistor values.

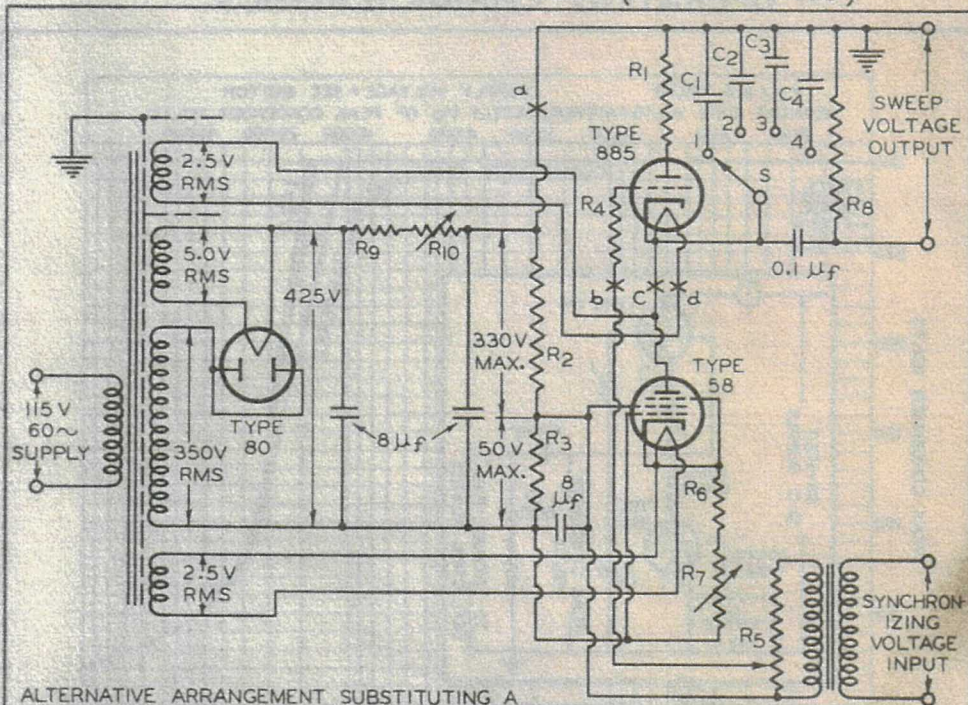




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### LINEAR SWEEP-CIRCUIT OSCILLATOR DIAGRAM WITH CURRENT-LIMITING PENTODE (A-C OPERATED)



ALTERNATIVE ARRANGEMENT SUBSTITUTING A CURRENT-LIMITING INDUCTANCE FOR  $R_1$  AND PROVIDING AUTOMATIC SELECTION OF PROPER INDUCTANCE FOR EACH CONDENSER SETTING

$R_1$  = 1000-OHM RESISTOR TO LIMIT PLATE DISCHARGE CURRENT OF TYPE 885 TO SAFE VALUE

$R_2$  = 38000-OHM RESISTOR TO GIVE VOLTAGE DROP OF 330 VOLTS MAXIMUM

$R_3$  = 6000-OHM RESISTOR TO GIVE VOLTAGE DROP OF 50 VOLTS

$R_4$  = 300000-OHM GRID-CURRENT-LIMITING RESISTOR

$R_5$  = 10000-OHM POTENTIOMETER

$R_6$  = 1500-OHM RESISTOR

$R_7$  = 50000-OHM VARIABLE RESISTOR, WITHOUT BY-PASS CONDENSER, FOR FREQUENCY CONTROL

$R_8$  = 10- MEGOHM RESISTOR

$R_9$  = 7500-OHM RESISTOR

$R_{10}$  = 0 TO 50 000-OHM VARIABLE RESISTOR FOR SWEEP AMPLITUDE CONTROL

S = FREQUENCY - RANGE SWITCH

$S_1$  = FREQUENCY - RANGE SWITCH PROVIDING FOR SELECTION OF PROPER INDUCTANCE

$C_1$  = 0.1  $\mu$ f

$C_2$  = 0.025  $\mu$ f

$C_3$  = 0.005  $\mu$ f

$C_4$  = 0.001  $\mu$ f

CONDENSERS TO PROVIDE SEVERAL FREQUENCY RANGES:

SWITCH S ON	1	2	3	4
CYCLES RANGE	12 TO 60	50 TO 250	240 TO 1200	1000 TO 5000

WITH SMALLER CONDENSERS AND WITH CARE IN CIRCUIT LAYOUT AND WIRING, THE OPERATING RANGE MAY BE EXTENDED TO HIGHER FREQUENCIES

NOTE: SWEEP OUTPUT VOLTAGE MAY BE APPROXIMATELY DOUBLED IF  $R_1$  IS REPLACED BY AN INDUCTANCE, BUT THE FREQUENCY WILL BE CUT IN HALF. THE DESIRED FREQUENCY, HOWEVER, MAY BE OBTAINED BY ADJUSTING CONDENSER VALUE. THE VALUE OF INDUCTANCE IS NOT CRITICAL BUT MUST BE LARGE ENOUGH TO LIMIT THE PEAK DISCHARGE CURRENT OF TYPE 885 TO 300 MA. AT THE LOWEST OPERATING FREQUENCY OF EACH RANGE. TOO LARGE AN INDUCTANCE INTERFERES WITH HIGH-FREQUENCY OPERATION. SUITABLE MINIMUM VALUES OF INDUCTANCE FOR THE CORRESPONDING CAPACITANCES ARE:

FOR  $C_1$ ,  $L_1$  = 100 MH. MINIMUM  
 $C_2$ ,  $L_2$  = 25 MH. "  
 $C_3$ ,  $L_3$  = 5 MH. "  
 $C_4$ ,  $L_4$  = 1 MH. "

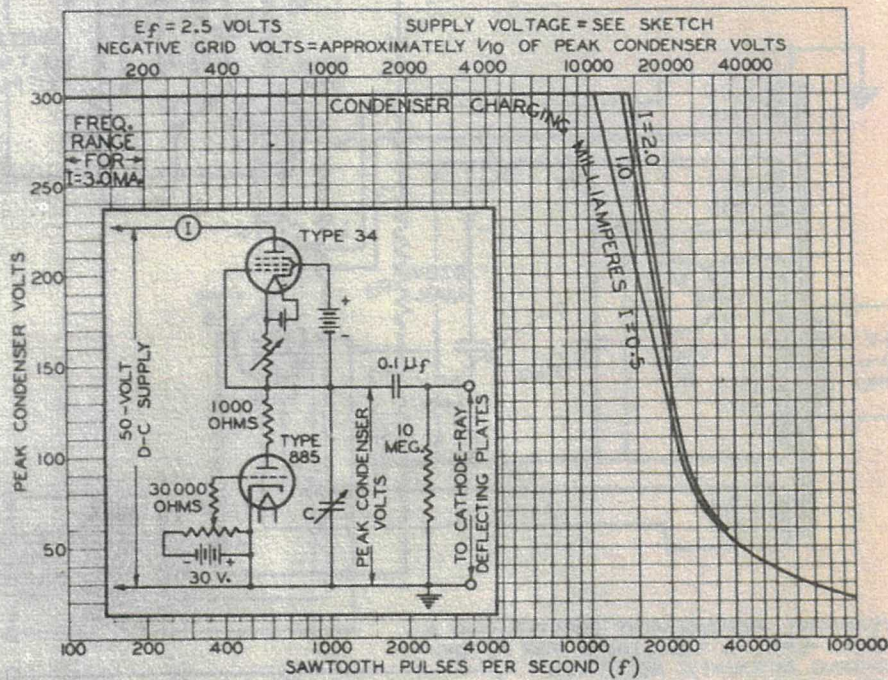
THE LICENSE EXTENDED TO THE PURCHASER OF TUBES APPEARS IN THE LICENSE NOTICE ACCOMPANYING THEM. INFORMATION CONTAINED HEREIN IS FURNISHED WITHOUT ASSUMING ANY OBLIGATIONS.

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## OPERATING CHARACTERISTICS



FOR A 0.5 MILLIAMPERE CHARGING CURRENT, SWEEP VOLTAGES MAY BE OBTAINED BETWEEN ESSENTIALLY 0 AND 300 VOLTS FOR A FREQUENCY RANGE UP TO ABOUT 10000 CYCLES. AT HIGHER FREQUENCIES, THE MAXIMUM OBTAINABLE SWEEP VOLTAGE FALLS OFF AS SHOWN ON THE CURVE.

FOR A 1.0 MILLIAMPERE CHARGING CURRENT, SWEEP VOLTAGES MAY BE OBTAINED BETWEEN ESSENTIALLY 50 AND 300 VOLTS FOR A FREQUENCY RANGE UP TO ABOUT 15000 CYCLES. BETWEEN 5000 AND 30000 CYCLES, IT IS ADVISABLE TO OPERATE TOWARD THE UPPER VOLTAGE BOUNDARY OF THE CURVE FOR BEST RESULTS.

FOR A 2.0 MILLIAMPERE CHARGING CURRENT, SWEEP VOLTAGES MAY BE OBTAINED BETWEEN ESSENTIALLY 150 AND 300 VOLTS FOR A FREQUENCY RANGE UP TO ABOUT 2500 CYCLES. BETWEEN 2500 AND 20000 CYCLES, IT IS ADVISABLE TO OPERATE TOWARD THE UPPER VOLTAGE BOUNDARY OF THE CURVE FOR BEST RESULTS.

FOR A 3.0 MILLIAMPERE CHARGING CURRENT AND A MAXIMUM RANGE OF 0 TO 200 CYCLES, IT IS ADVISABLE TO OPERATE WITH A 300-VOLT SWEEP VOLTAGE.

APPROX. CHARGING-CONDENSER VALUES ( $\mu$ f) VS. SAWTOOTH-PULSE FREQUENCIES (f) FOR SWEEP VOLTAGE OF 300 VOLTS AND INDICATED CONDENSER-CHARGING CURRENTS

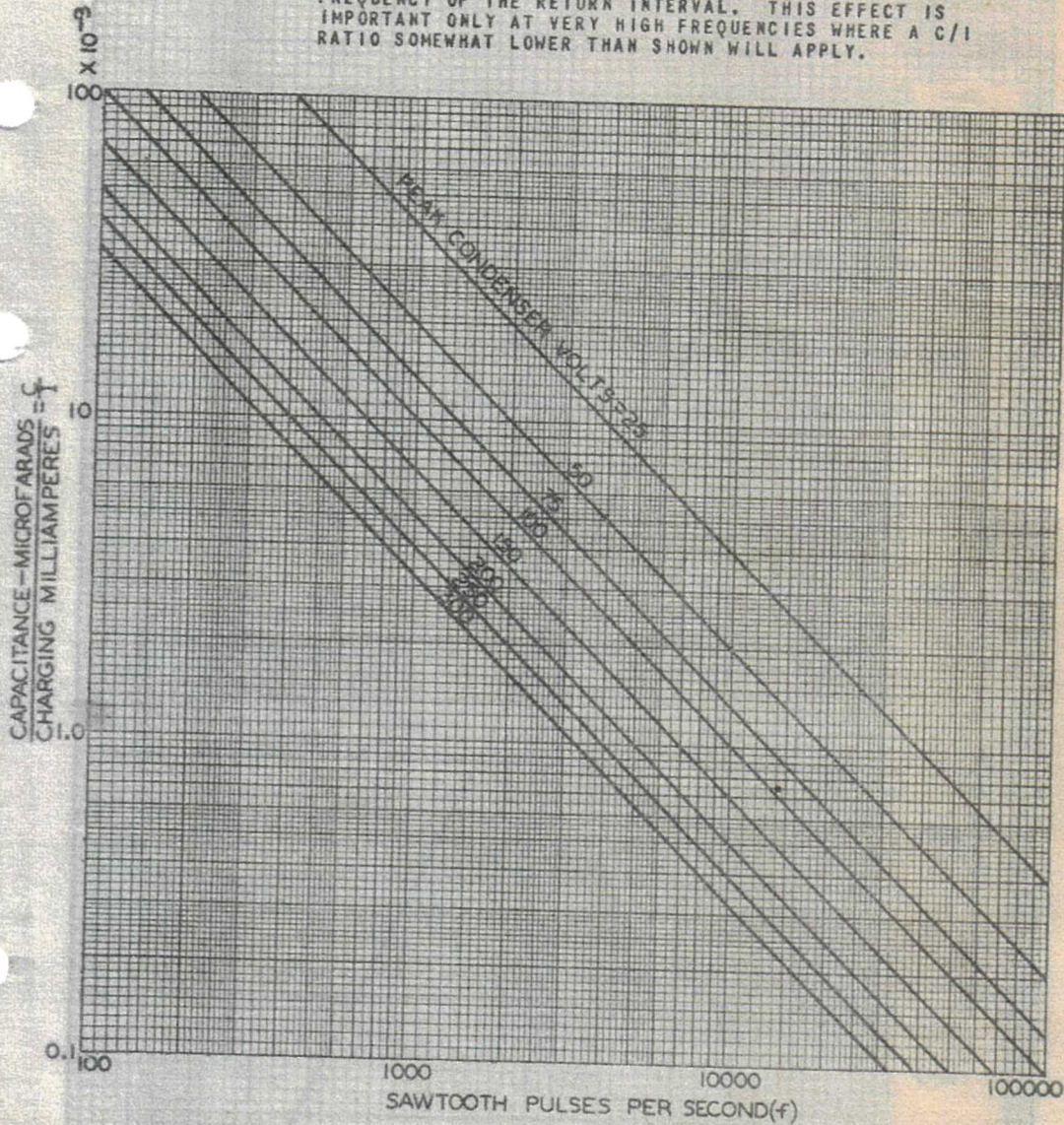
f(cycles)	I = 0.5 Ma.	I = 1.0 Ma.	I = 1.5 Ma.	I = 2.0 Ma.
100	0.015	0.033	0.05	0.065
500	0.003	0.0065	0.01	0.013
1000	0.0015	0.0033	0.005	0.0065
5000	0.0003	0.0006	0.001	0.0013
10000	Variable	Variable	0.0003	0.0004

FOR HIGHER FREQUENCIES, A VARIABLE CONDENSER IS RECOMMENDED SO THAT INDIVIDUAL ADJUSTMENT CAN BE MADE TO MEET REQUIREMENTS. AT HIGH FREQUENCIES, THE DISTRIBUTED CAPACITY OF THE CIRCUIT SHUNTS AN APPRECIABLE CAPACITY ACROSS THE CHARGING CONDENSER. IT IS NECESSARY, THEREFORE, TO KEEP DISTRIBUTED CAPACITY TO A MINIMUM. PRACTICAL MINIMUM VALUES OF DISTRIBUTED CAPACITY ARE BETWEEN 100 AND 200  $\mu$ f.



# DESIGN CONSIDERATIONS FOR SWEEP-CIRCUIT OSCILLATORS

- NOTE 1: C VALUES ARE TOTAL FOR CIRCUIT  
NOTE 2: C SHOULD BE MADE AS SMALL AS PRACTICAL CONSISTENT WITH FREEDOM FROM TIMING VARIATIONS  
NOTE 3: THESE CALCULATED CURVES NEGLECT THE EFFECT ON SWEEP FREQUENCY OF THE RETURN INTERVAL. THIS EFFECT IS IMPORTANT ONLY AT VERY HIGH FREQUENCIES WHERE A C/I RATIO SOMEWHAT LOWER THAN SHOWN WILL APPLY.



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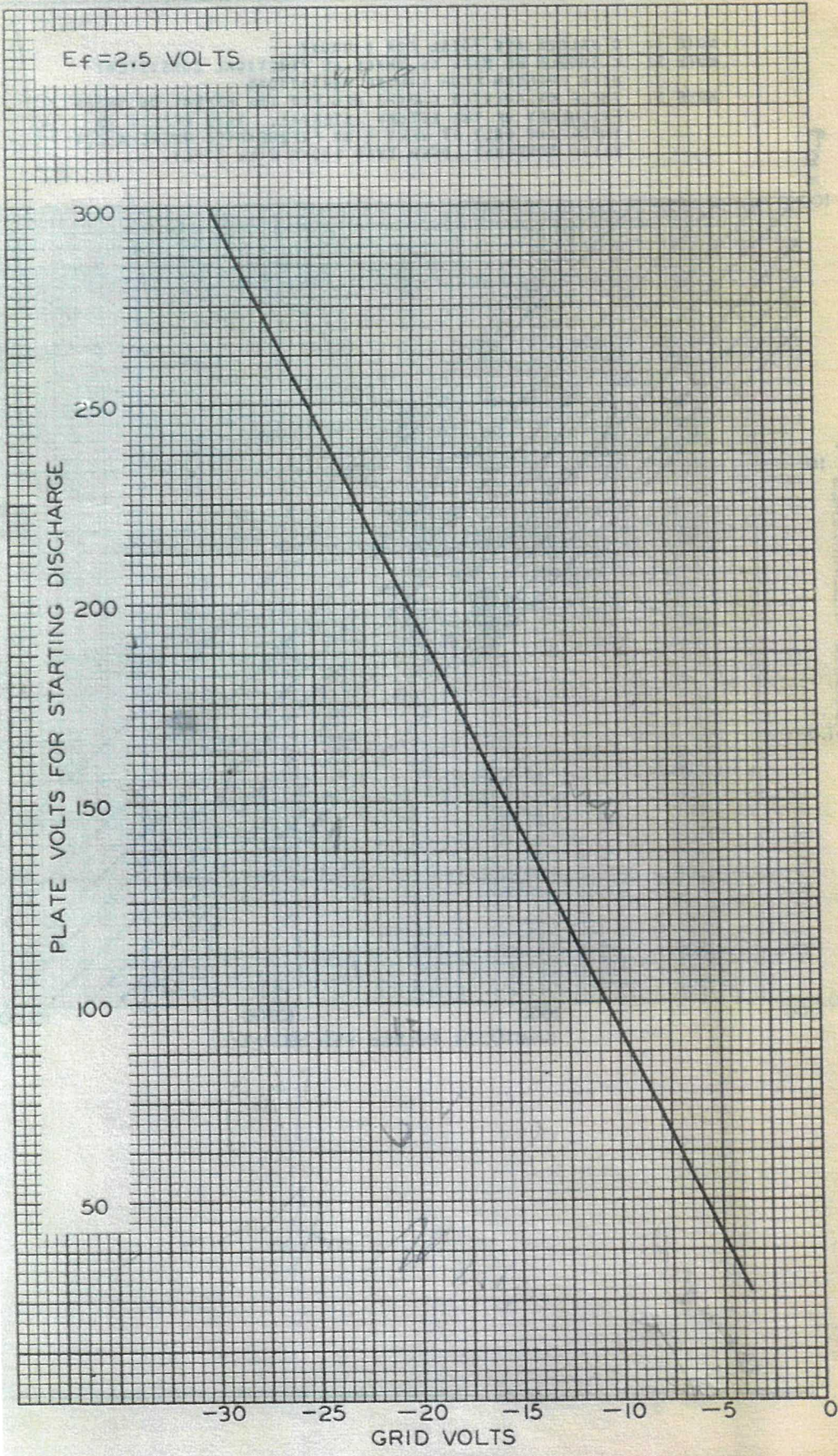
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# AVERAGE CONTROL CHARACTERISTICS



NOV. 22, 1933

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925-5419

# RADIOTRON

913

913

## HIGH-VACUUM CATHODE-RAY TUBE

LOW-VOLTAGE ELECTROSTATIC TYPE

WITH 1" MEDIUM-PERSISTENCE SCREEN FOR OSCILLOGRAPHIC USE

Heater Coated Unipotential Cathode  
Voltage 6.3 a-c or d-c volts  
Current 0.6 amp.

Fluorescent Screen:  
Material Phosphor No.1  
Pattern Color Greenish

Direct Interelectrode Capacitances:  
Control Electrode to all other Electrodes 10.5 max.  $\mu\text{f}$   
Deflecting Plate  $D_1$  to Deflecting Plate  $D_2$  3.6 max.  $\mu\text{f}$   
Deflecting Plate  $D_3$  to Deflecting Plate  $D_4$  4.3 max.  $\mu\text{f}$

*For plate identification, see next page.*

Maximum Overall Length 4-3/4"  
Maximum Diameter 1-23/32"  
Base Octal 8-Pin

### MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

High-Voltage Electrode (Anode No.2) Voltage 500 max. volts  
Focusing Electrode (Anode No.1) Voltage 125 max. volts  
Control Electrode (Grid) Voltage Never positive  
Grid Voltage for Current Cut-off \* -90 approx. volts  
Peak Voltage between Anode No.2 and any deflecting plate 250 max. volts  
Fluorescent-Screen Input Power/sq cm 5 max. mw

#### Typical Operation:

Heater Voltage 6.3 6.3 volts  
Anode #2 Voltage 250 500 volts  
Anode #1 Voltage 50 100 approx. volts

Grid Voltage Adjusted to give suitable luminous spot

#### Deflection Sensitivity:

Plates  $D_1$  &  $D_2$  0.15 0.07 mm/volt d.c.  
Plates  $D_3$  &  $D_4$  0.21 0.10 mm/volt d.c.

\* With approximately 100 volts (to focus) on Anode No.1.

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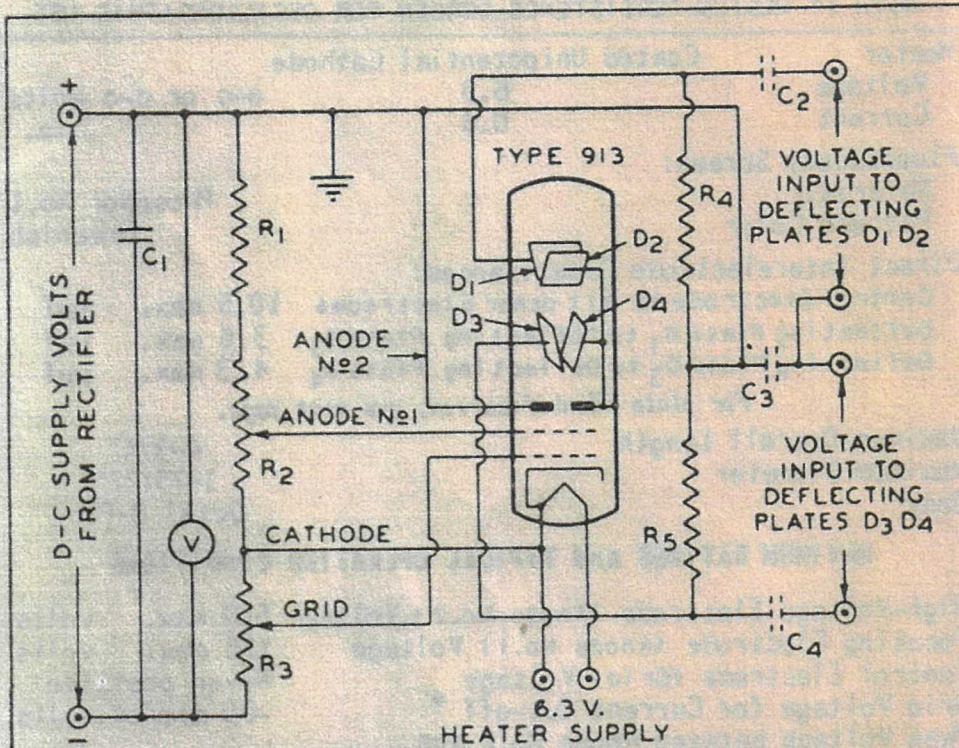
FEBRUARY, 1937

SYDNEY, AUSTRALIA

# RADIOTRON

913

## TYPICAL OSCILLOGRAPH CIRCUIT



$C_1$  = FILTER CONDENSER - 4 TO 8  $\mu$ f  
 $C_2, C_3, C_4$  = 0.1  $\mu$ f  
 $R_1$  = 130000 OHMS, 2 WATTS  
 $R_2$  = 40000 OHMS  
 $R_3$  = 30000 OHMS  
 $R_4, R_5$  = 1 TO 10 MEG.

NOTE 1: PLATES  $D_2$  AND  $D_4$  ARE CONNECTED WITHIN THE TUBE TO ANODE No 2 AND THE SHELL.

NOTE 2: WHERE THE CATHODE-RAY TUBE AND ITS D-C POWER SUPPLY ARE A COMPLETE UNIT, D-C BLOCKING CONDENSERS  $C_2, C_3,$  &  $C_4$  MAY BE OMITTED.

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.

AMALGAMATED WIRELESS VALVE CO. LTD.

FEBRUARY, 1937

SYDNEY, AUSTRALIA

# RADIOTRON

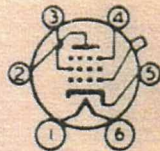
1603

1603

## TRIPLE-GRID DETECTOR AMPLIFIER

For applications critical as to microphonics

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.3	amp.
Direct Interelectrode Capacitances:		
	<u>Pentode Connection</u>	<u>Triode Connection</u> <sup>□</sup>
Grid to Plate	0.007 max. <sup>⊙</sup>	2.0 μf
Input	5.0	3.0 μf
Output	6.5	10.5 μf
Overall Length		4-11/16" to 4-15/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Small Metal
Base		Small 6-Pin
Pin 1 - Heater		Pin 5 - Cathode
Pin 2 - Plate		Pin 6 - Heater
Pin 3 - Screen		Cap - Grid
Pin 4 - Suppressor		
Mounting Position	BOTTOM VIEW	Any ←



□ grids #2 and #3 tied to plate.  
⊙ with shield-can. The internal shield within the dome of the 1603 is connected to the cathode within the tube.

Type 1603 is similar electrically and in external dimensions to type 6C6 but is intended for applications which are critical as to microphonics.  
For maximum ratings, typical operating conditions and curves, see under type 6J7-G.

← Indicates a change.