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# RADIOTRON

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**VALVE  
DATA**



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The National Electrical and Engineering Co. Ltd.

N.Z. DISTRIBUTORS FOR

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

**RADIOTRON**  
**RECEIVING VALVE**  
**DATA HANDBOOK**



Published by  
The Wireless Press  
*for*  
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 to all subscribers to Radiotron Technical Publications. The annual subscription, covering the period January to December each year, 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" or the "Radiotron Replacement Guide" may be consulted. Any of these charts 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

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Telephone No. BO 522

# 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been issued in the past but which are not shown in this list should be removed from the handbook, since they are now out of date.** Types shown in bold face are of Australian manufacture.

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- 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>

-1603

\* 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 30th April, 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 new "Radiotron Characteristics Chart" dated April, 1941.

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1A4-P (data) .....	Oct., 1940
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1L5-G (Sheet 1, data) .....	Feb., 1941
1L4-G (Sheet 2, curves) .....	Feb., 1941
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## VALVE DATA HANDBOOK

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# 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

## 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 Octal Bases	2.0 Volt 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 . . . . .	..	1C6 ≡	1C7-G
	1Q5-GT	..	..
	1D8-GT	..	..
..	1D4 ≡	1L5-G	

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

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## CLASSIFICATION OF AUSTRALIAN - MADE RECEIVING TYPES

### VALVES FOR MAINS-OPERATED EQUIPMENT.

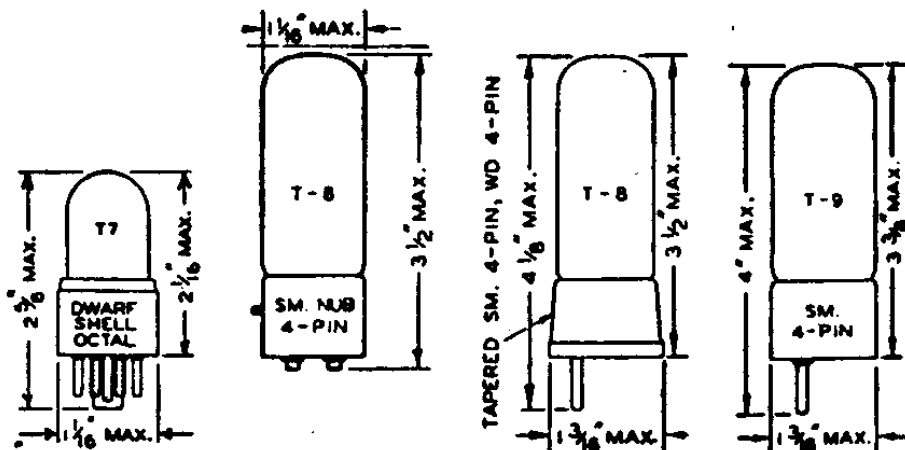
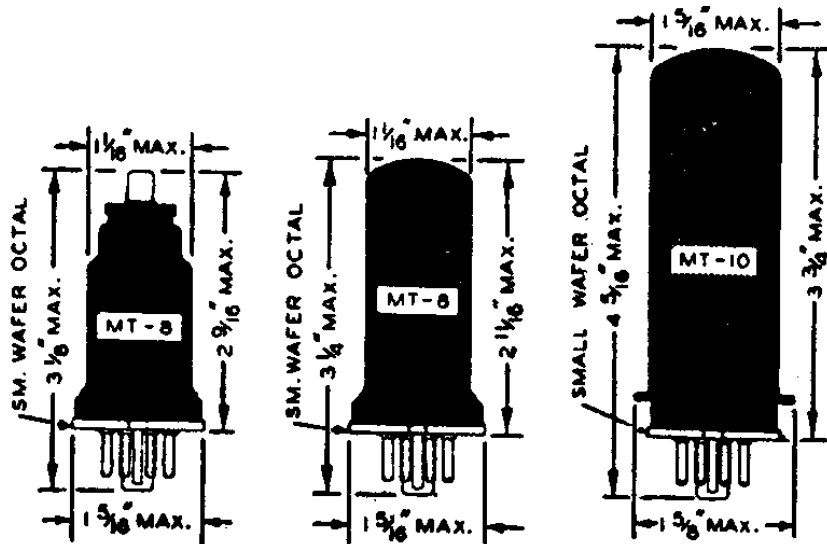
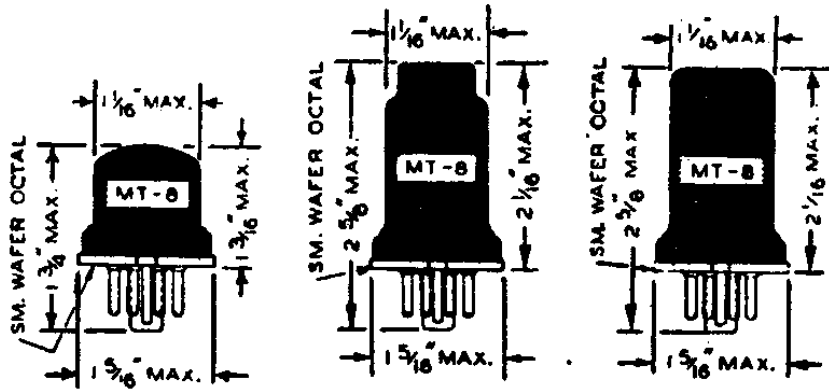
	2.5 Volt Old Style Bases	6.3 Volt Old Style Bases	Octal Bases
General Purpose Triodes . . . . .	*57 ≡	*6C6 ≡	*6J7-G
	..	*6B7 ≡	*6B8-G
Power Amplifier Triodes . . . . .	*57 ≡	85	*6J7-G
	..	*6C6 ≡	*6B8-G
	..	85	..
	*2A5 ≡	*42 ≡	*6F6-G
High-Mu Triodes . . .	..	..	*6V6-G
	45	..	..
Diode, Triode Types . .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

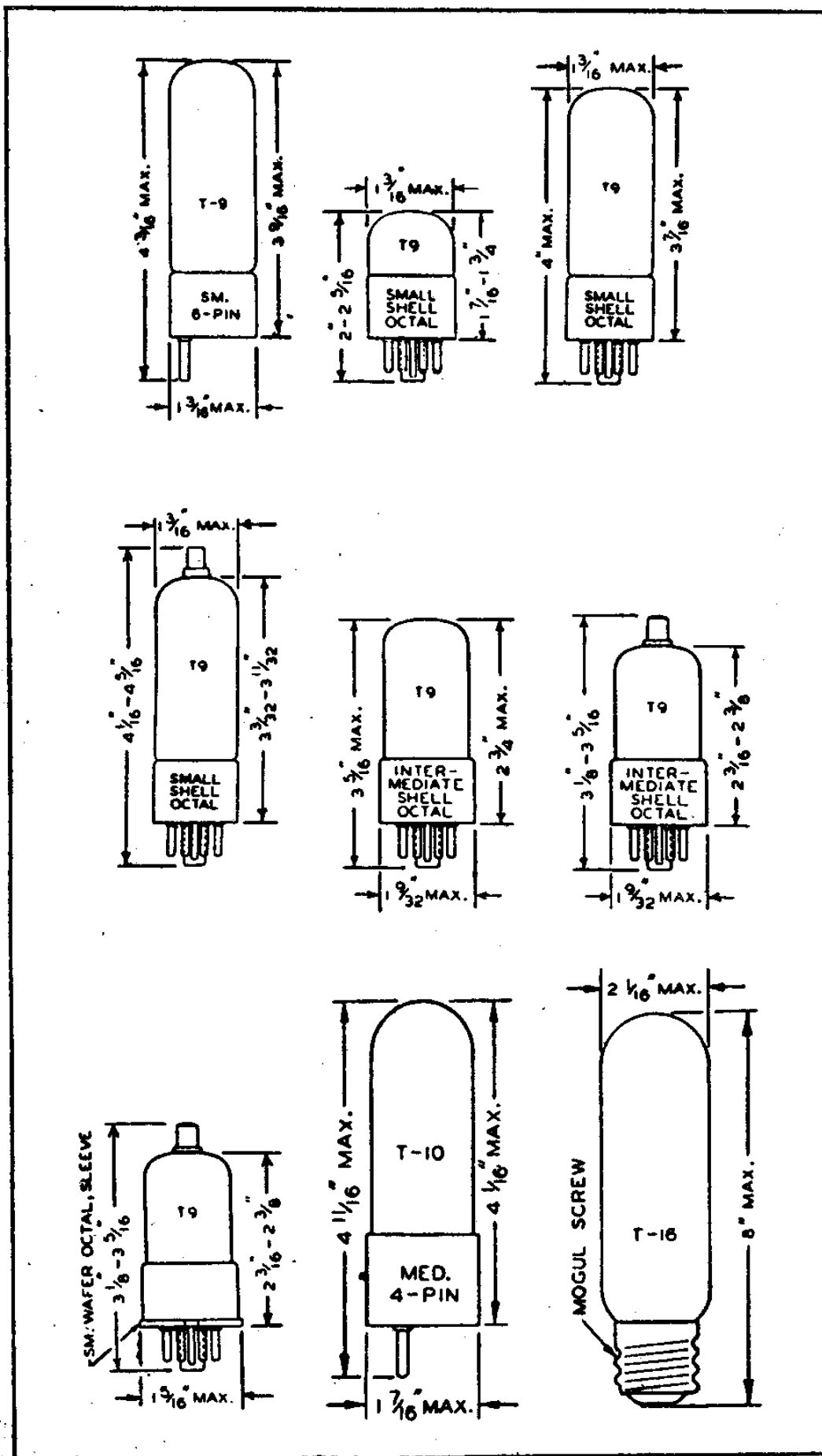
SM. = SMALL  
MED. = MEDIUM



OUT-  
LINES

# RADIOTRON

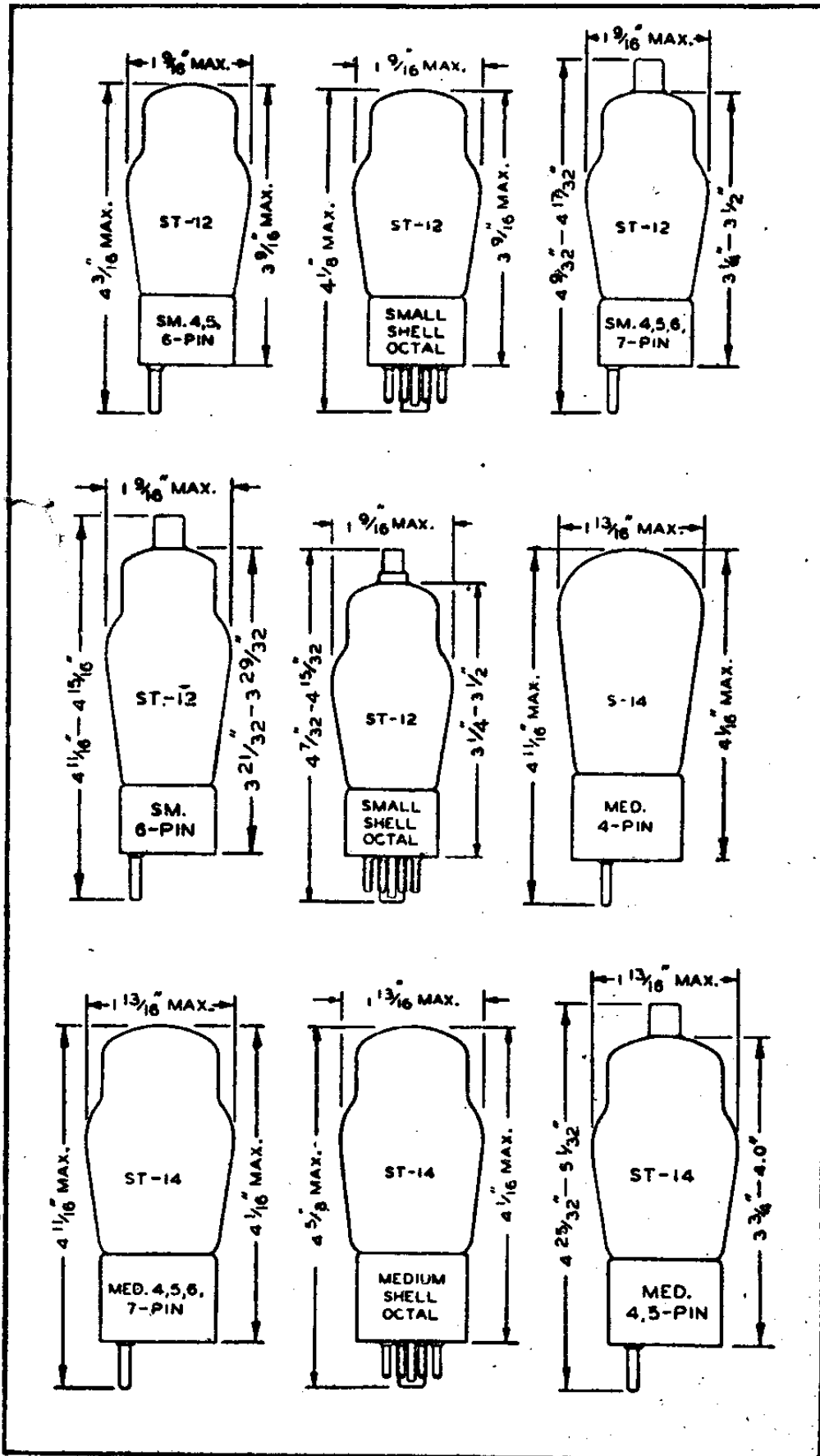
## RECEIVING VALVE OUTLINES



# RADIOTRON

OUT-  
LINES  
SHEET 2

## RECEIVING VALVE OUTLINES



AMALGAMATED WIRELESS VALVE Co. PTY. LTD.

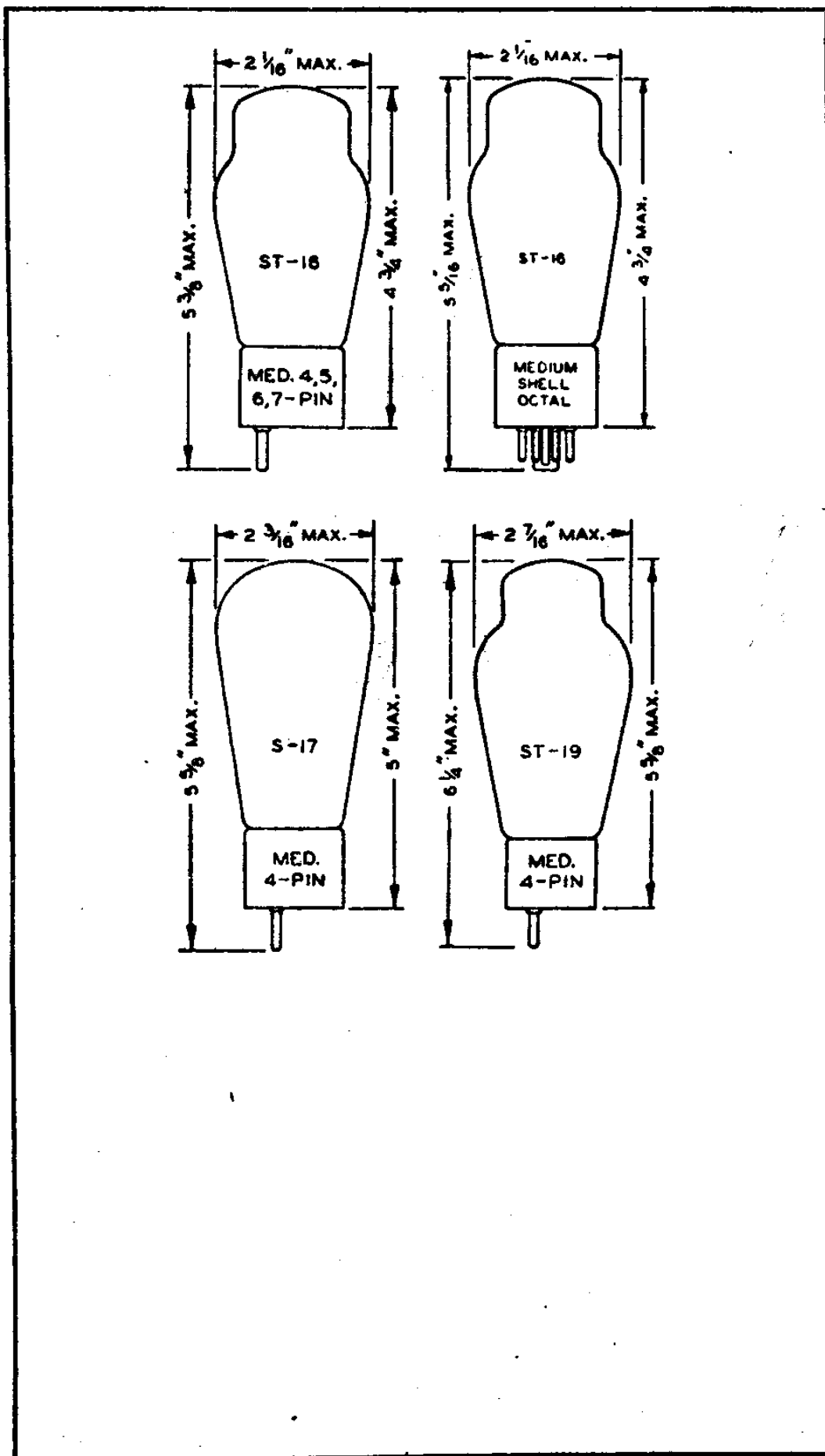
APRIL, 1941

SYDNEY, AUSTRALIA

OUT-  
LINES

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## RECEIVING VALVE OUTLINES



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## 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 ( $F_v$ ).

$$F_i = F_v \sqrt{F_v}$$

$$F_p = F_v^2 \sqrt{F_v}$$

$$F_r = 1/\sqrt{F_v}$$

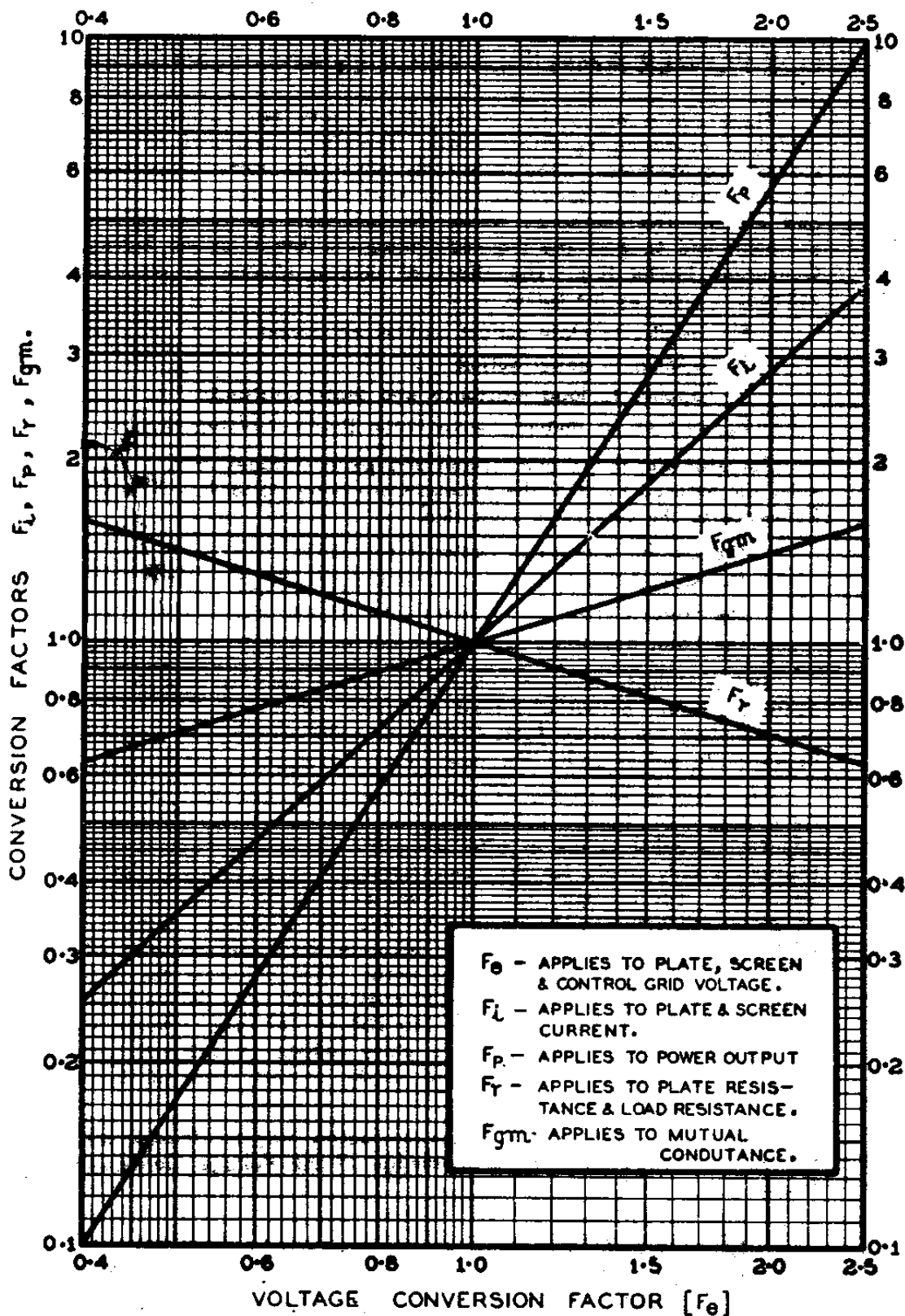
$$F_{gm} = \sqrt{F_v}$$



# RADIOTRON

## CONVERSION FACTORS

FOR POWER AMPLIFIER TRIODES AND PENTODES



$F_0$  - APPLIES TO PLATE, SCREEN & CONTROL GRID VOLTAGE.  
 $F_L$  - APPLIES TO PLATE & SCREEN CURRENT.  
 $F_P$  - APPLIES TO POWER OUTPUT  
 $F_r$  - APPLIES TO PLATE RESISTANCE & LOAD RESISTANCE.  
 $F_{gm}$  - APPLIES TO MUTUAL CONDUCTANCE.

(FOR INSTRUCTIONS SEE BACK OF SHEET)

# RADIOTRON

1A7-GT

PENTAGRID CONVERTER



Filament	Coated	
Voltage	1.4	d-c volts
Current	0.05	amp.
Direct Interelectrode Cap. <sup>0</sup>		
Grid #4 to Plate		0.30 μpf.
Grid #4 to Grid #2		0.28 μpf.
Grid #4 to Grid #1		0.12 μpf.
Grid #1 to Grid #2		0.90 μpf.
Grid #4 to All Other Electrodes (R-F Input)		6.5 μpf.
Grid #2 to All Other Electrodes Except Grid #1 (Osc. Output)		4.6 μpf.
Grid #1 to All Other Electrodes Except Grid #2 (Osc. Input)		4.0 μpf.
Plate to All Other Electrodes (Mixer Output)		11 μpf.

Overall Length	3-15/32" max.
Seated Height	2-29/32" max.
Maximum Diameter	1- 5/16"
Bulb	T-9
Cap	Skirted Min.
Base	Intermediate Shell Octal 8-Pin.

## Basing Designation

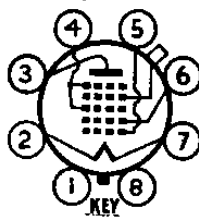
Pin 1 - No

Connection

Pin 2-Filament +

Pin 3-Plate

Pin 4-Grids #3 &amp; #5



GT-72

Pin 5-Grid #1

Pin 6-Grid #2

Pin 7-Fil. -

Pin 8-No Con.

Cap - Grid #4

Mounting Position

Any

BOTTOM VIEW

CONVERTER SERVICE

Plate Voltage	110 max. Volts
Screen (Grids #3 & #5) Voltage **	65 max. volts
Screen Supply Voltage	110 max. volts
Anode-Grid (Grid #2) Voltage	110 max. volts
Total Cathode Current	4 max. ma.
Typical Operation:	
Plate	90 volts
Screen **	45 volts
Anode-Grid	90 volts
Control-Grid (Grid #4)▲	0 volts
Oscillator-Grid (Grid #1) Resistor	200000 ohms.
Plate Res.	0.6 megohm
Conversion Transcond.	250 μmhos
Convers. Transcond. grid #4 bias of -3v.	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 550 micromhos under the following conditions: plate volts, 90; screen volts, 45; cont.-grid volts, 0; anode-grid volts, 90; and oscillator-grid volts, 0.

○ With close-fitting shield conn. to negative fil. terminal.

\*\* Obtained preferably by using a properly by-passed 45000- to 75000-ohm voltage dropping resistor in series with the supply voltage.

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

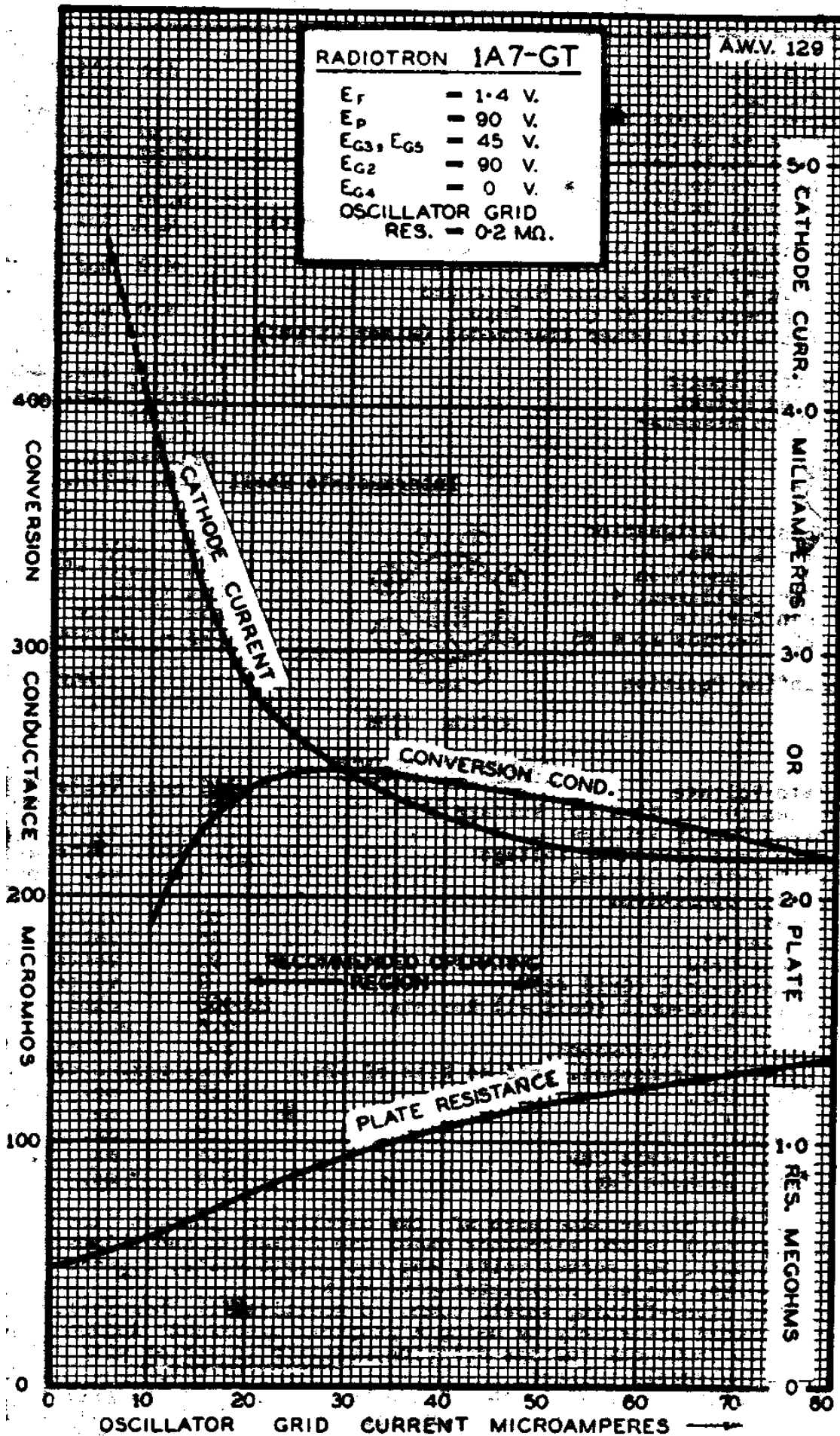
← Indicates a Change.

1A7-GT

# RADIOTRON

1A7-GT

## OPERATION CHARACTERISTIC



1C6  
1C7-G  
SHEET 1


# RADIOTRON

## 1C6

### PENTAGRID CONVERTER

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 5-Grids # 3 & # 5
Pin 2-Plate		Pin 6-Filament -
Pin 3-Grid # 2		Cap -Grid # 4
Pin 4-Grid # 1		

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*	μF
Grid #4 to Grid #2	0.30*	μF
Grid #4 to Grid #1	0.15*	μF
Grid #1 to Grid #2	1.5	μF
Grid #4 to All Other Electrodes(R-F Input)	10	μF
Grid #2 to All Other Electrodes(Osc.Output)	6	μF
Grid #1 to All Other Electrodes(Osc.Input)	6	μF
Plate to All Other Electrodes(Mixer Output)	10	μF

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

Base		Small Shell Octal 8-Pin
Pin 1-No connection		Pin 6-Grid #2
Pin 2-Filament +		Pin 7-Filament -
Pin 3-Plate		Pin 8-No Connection
Pin 4-Grids # 3 & # 5		Cap -Grid # 4
Pin 5-Grid # 1		

BOTTOM VIEW (G-7Z)

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

1C7-G

## 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.

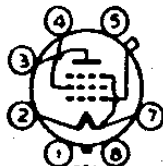
# RADIOTRON

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 (G-5Y) Vertical, Base Down <sup>o</sup>	



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

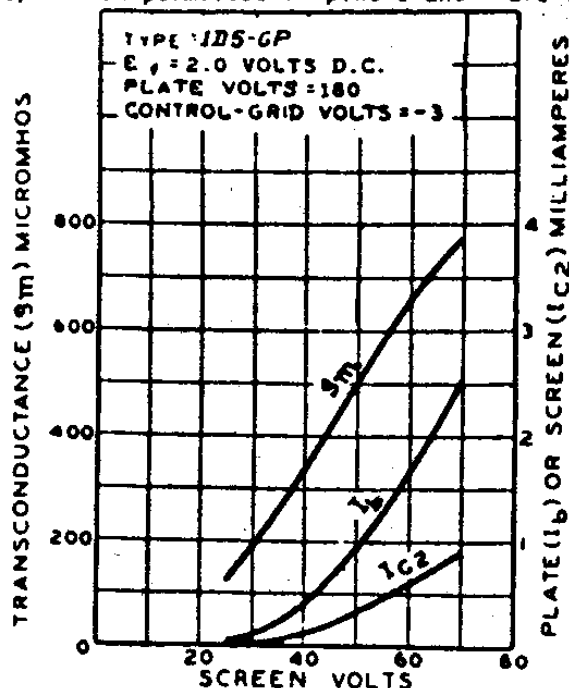
Plate Voltage	180 max. volts
Screen Voltage	67.5 max. volts
Grid Voltage	-3 min. volts

#### 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.

<sup>o</sup> horizontal operation permitted if pins 2 and 7 are in vertical plane



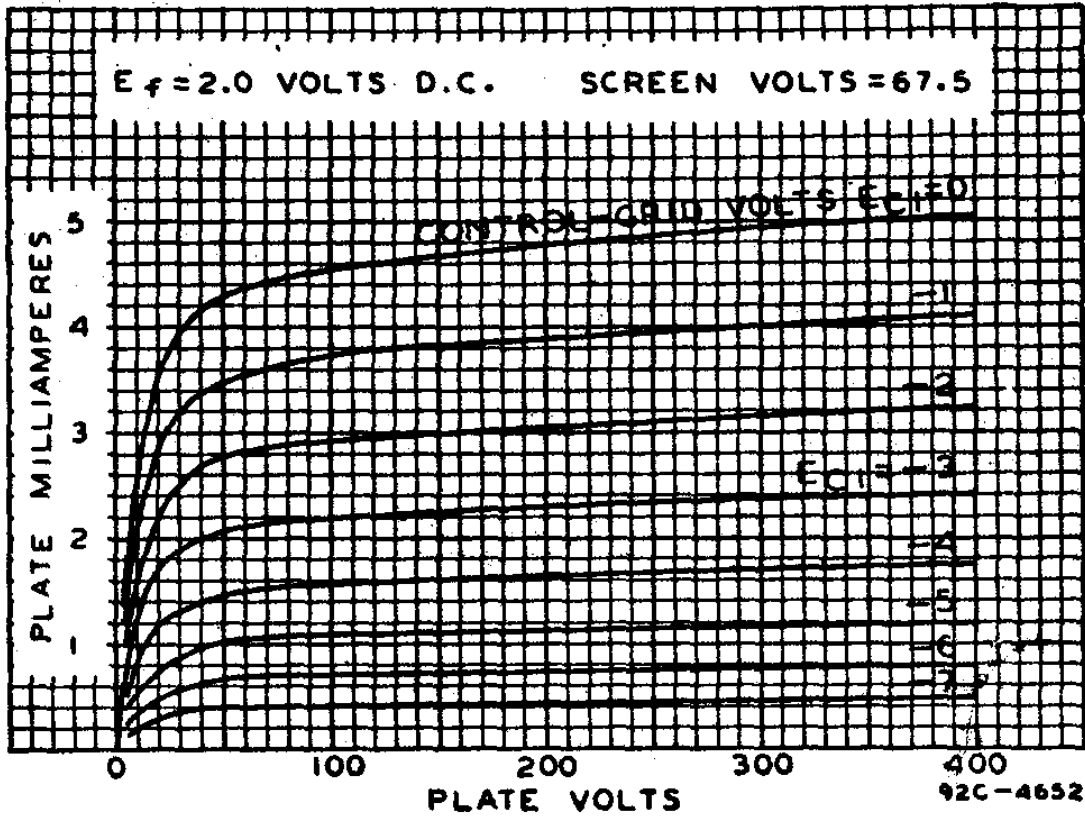
92C-4635

1D5-GP

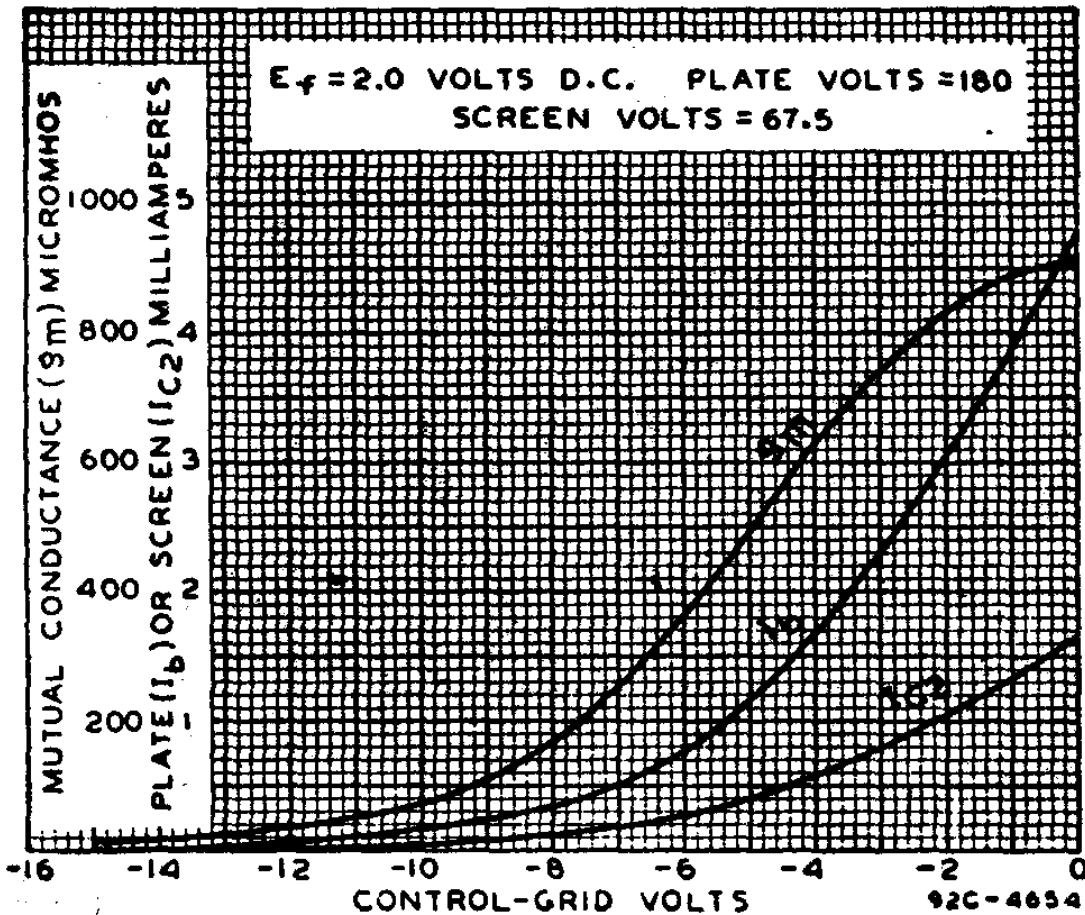
# RADIOTRON

1D5-GP

## AVERAGE PLATE CHARACTERISTICS

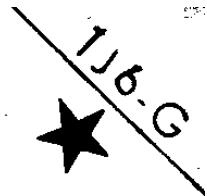


## AVERAGE CHARACTERISTICS



# RADIOTRON

1J6-G



## CLASS B TWIN AMPLIFIER

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.24	amp.
Maximum Overall Length		4-1/8"
Maximum Diameter		1-9/16"
Bulb		ST-12
Mounting Position		Vertical, Base Down
Base		Small Shell Octal 8-Pin
Pin 1-No Connection		Pin 5-Grid (T <sub>1</sub> )
Pin 2-Filament +		Pin 6-Plate (T <sub>1</sub> )
Pin 3-Plate (T <sub>2</sub> )		Pin 7-Filament -
Pin 4-Grid (T <sub>2</sub> )		Pin 8-No Connection

KEY

**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

◇ 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.

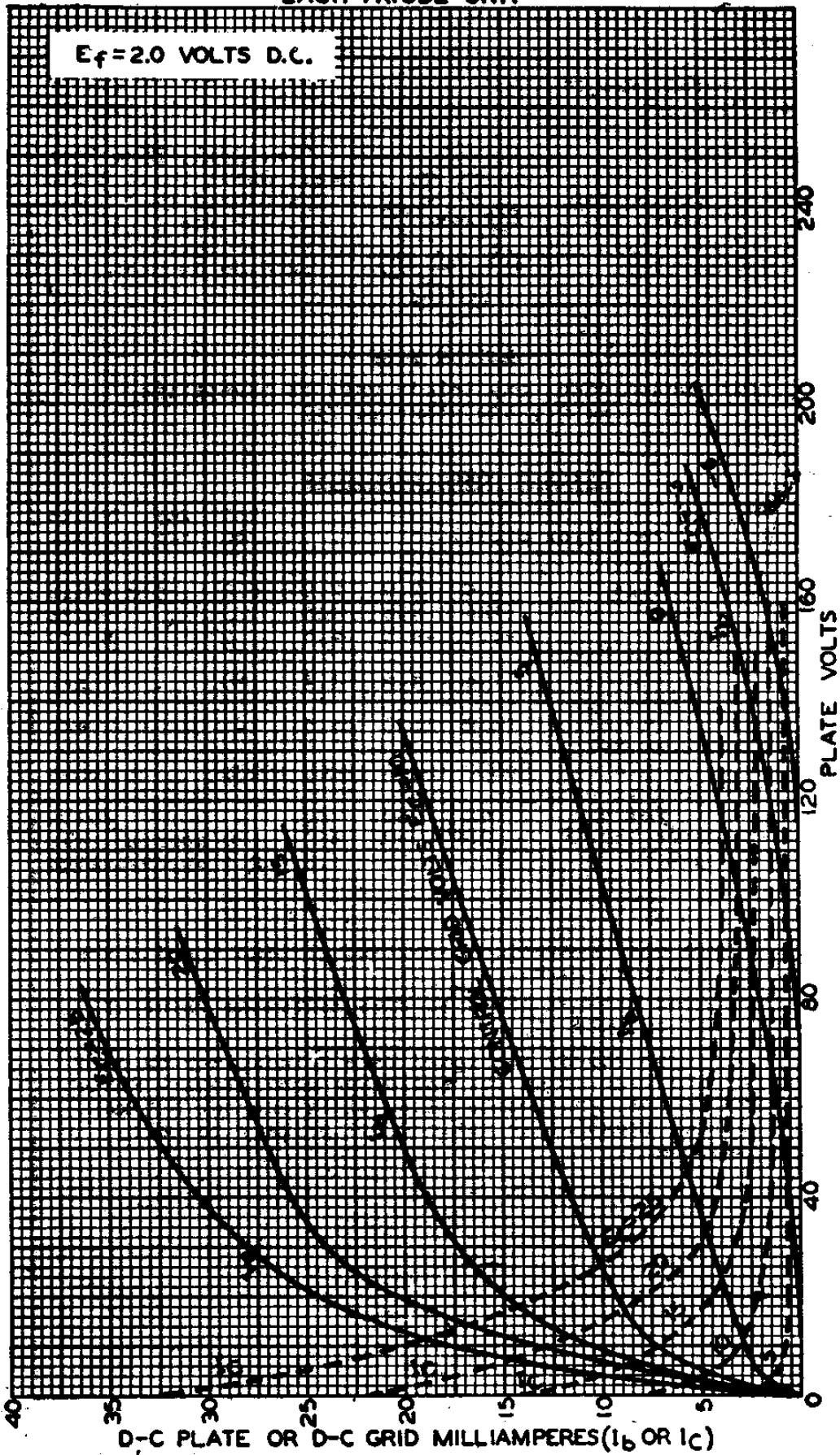


1J6-G

# RADIOTRON

1J6-G

## AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT



# 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 <sup>*</sup> :		
Pentode Connection:-		
Grid to Plate	0.010	max. $\mu\text{F.}$
Input	6.0	$\mu\text{F.}$
Output	9.5	$\mu\text{F.}$
Triode Connection <sup>#</sup> :-		
Grid to Plate	3.5	$\mu\text{F.}$
Grid to Filament	2.5	$\mu\text{F.}$
Plate to Filament	15.5	$\mu\text{F.}$
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 6-No Connection
Pin 4-Screen		Cap -Grid

BOTTOM VIEW (G-5Y)

<sup>\*</sup> With shield-can connected to negative filament terminal.  
<sup>#</sup> 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.

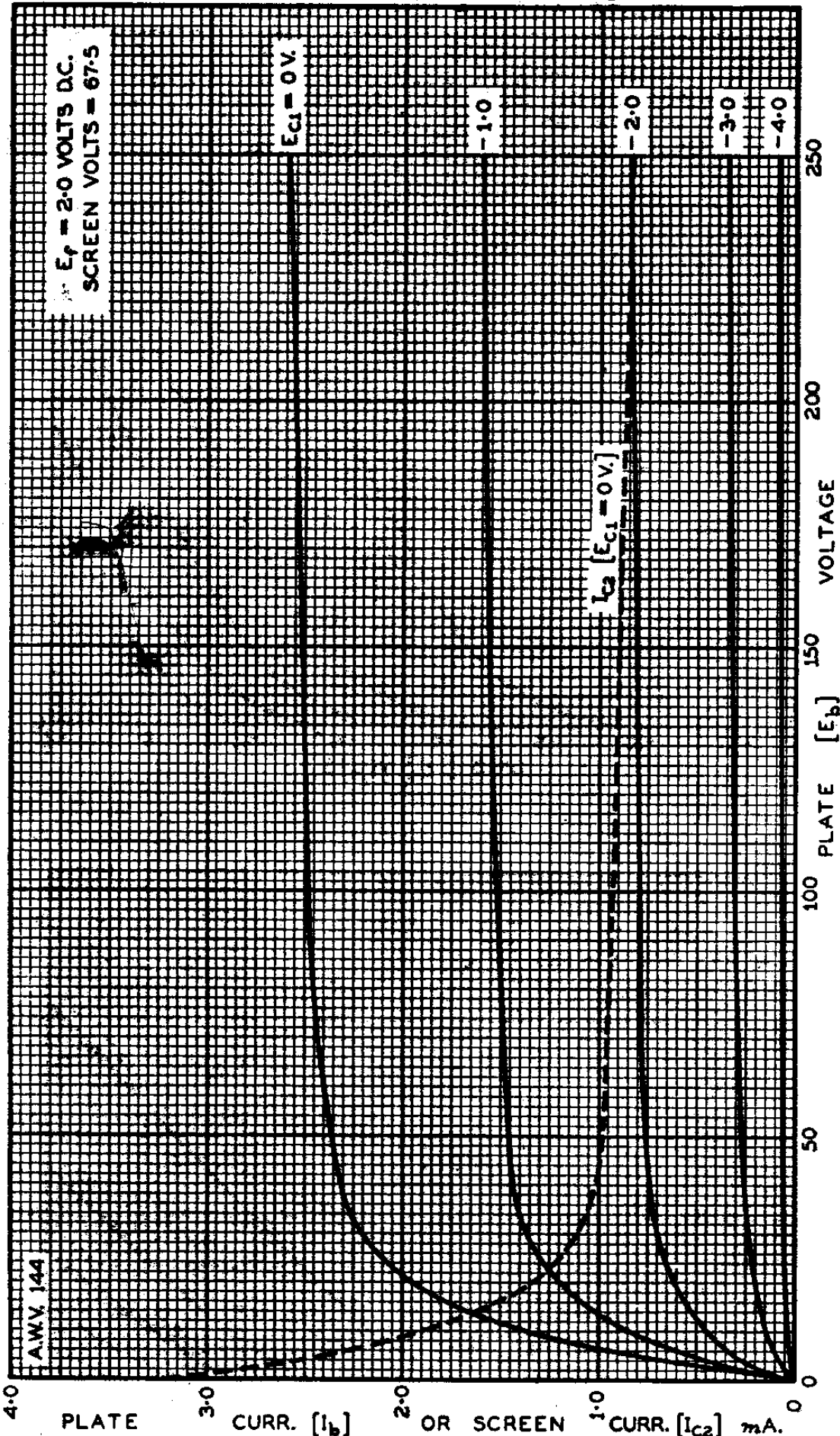
\* Screen connected to plate.

# RADIOTRON

1K5-G

## AVERAGE PLATE CHARACTERISTICS

1K5-G  
SHEET 2

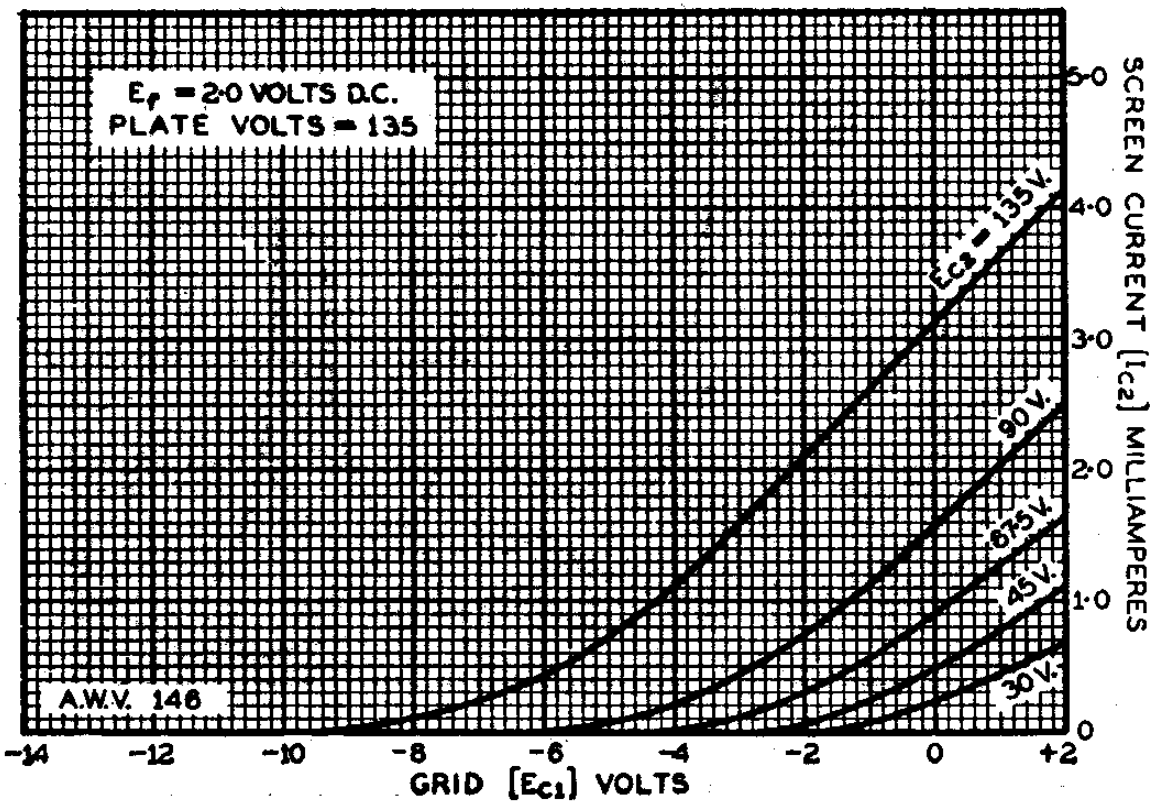
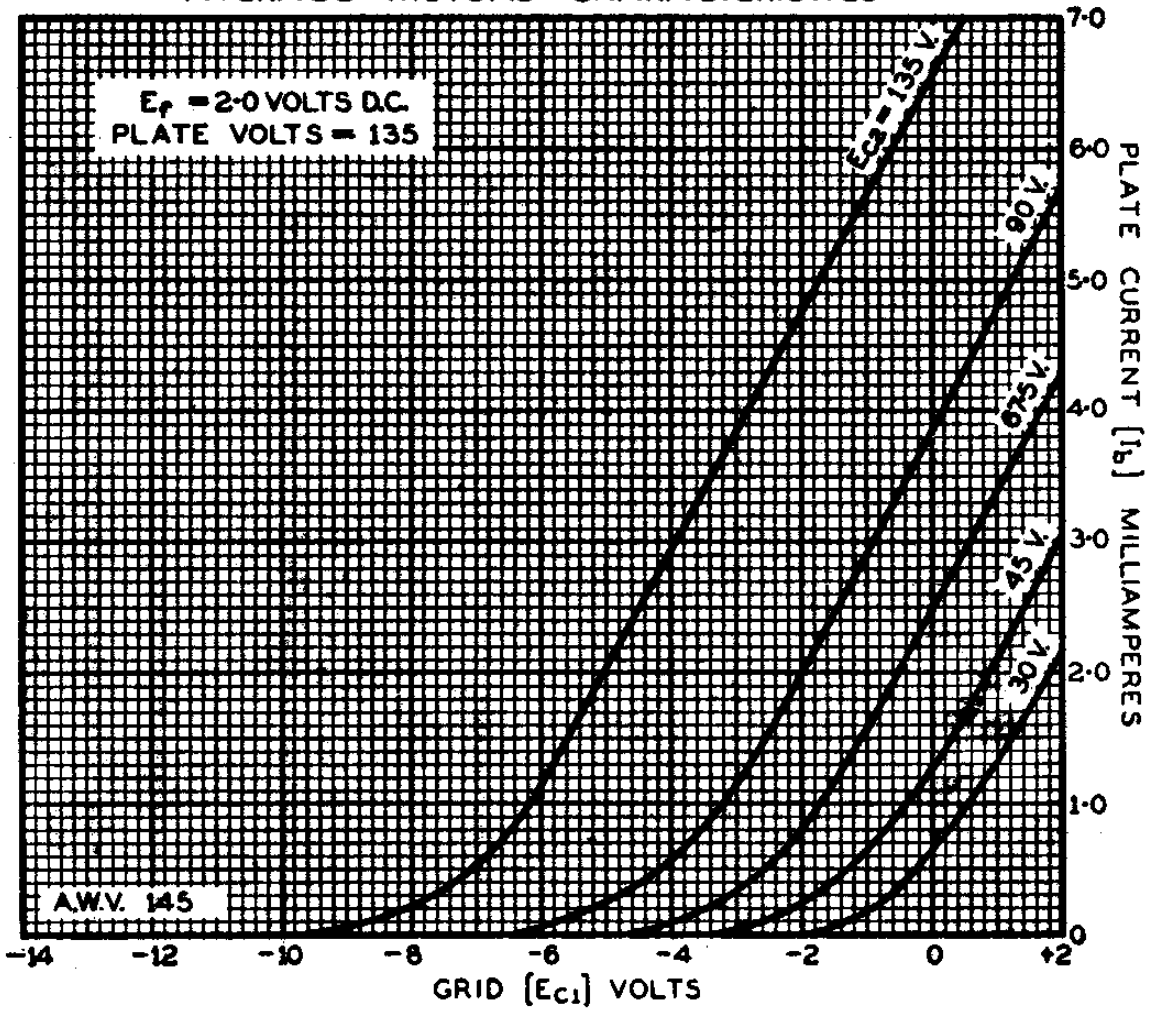


1K5-G

# RADIOTRON

1K5-G

## AVERAGE MUTUAL CHARACTERISTICS

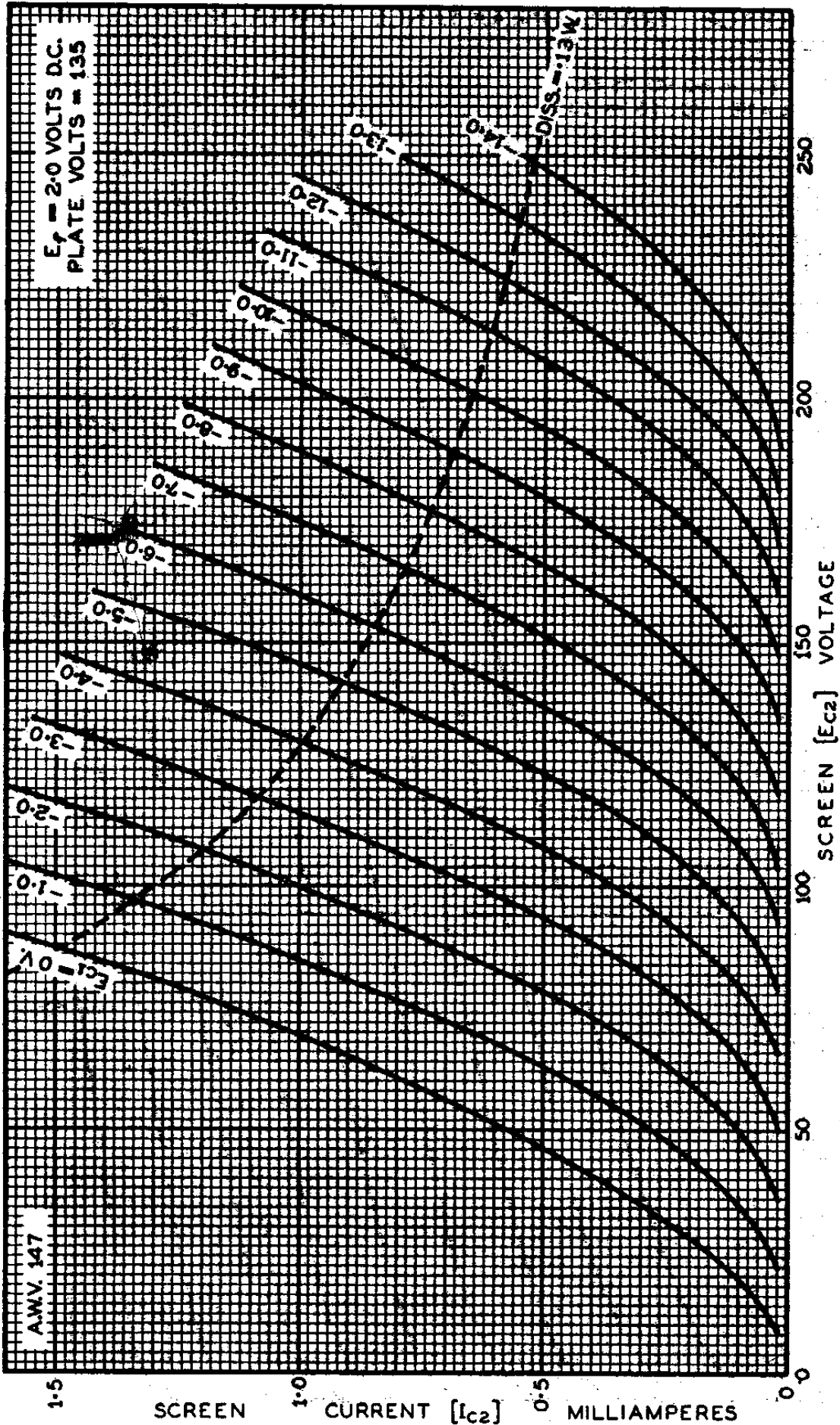


# RADIOTRON

1K5-G

## AVERAGE SCREEN CHARACTERISTICS

1K5-G  
SHEET 3

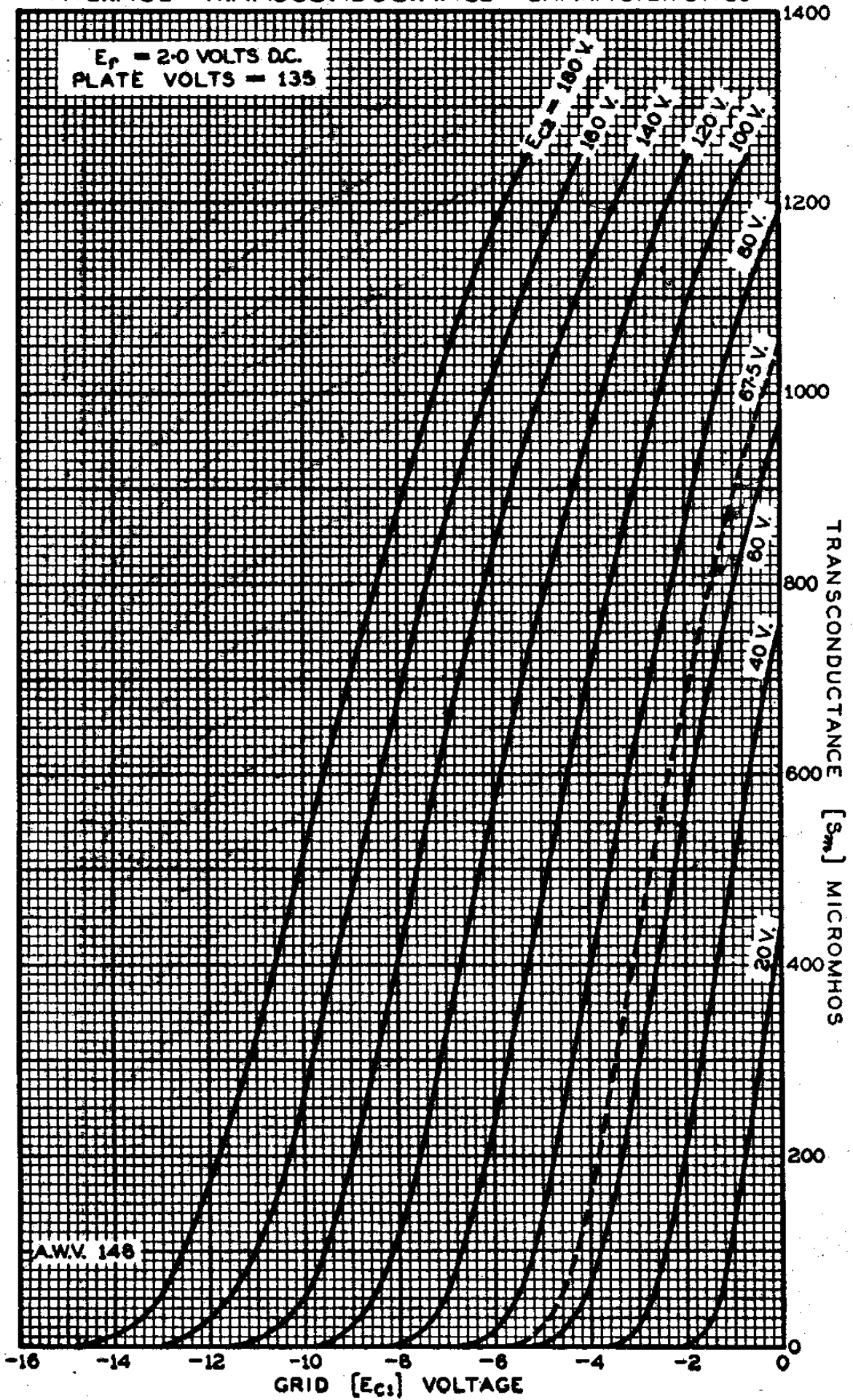


1K5-G

# RADIOTRON

1K5-G

## AVERAGE TRANSCONDUCTANCE CHARACTERISTICS

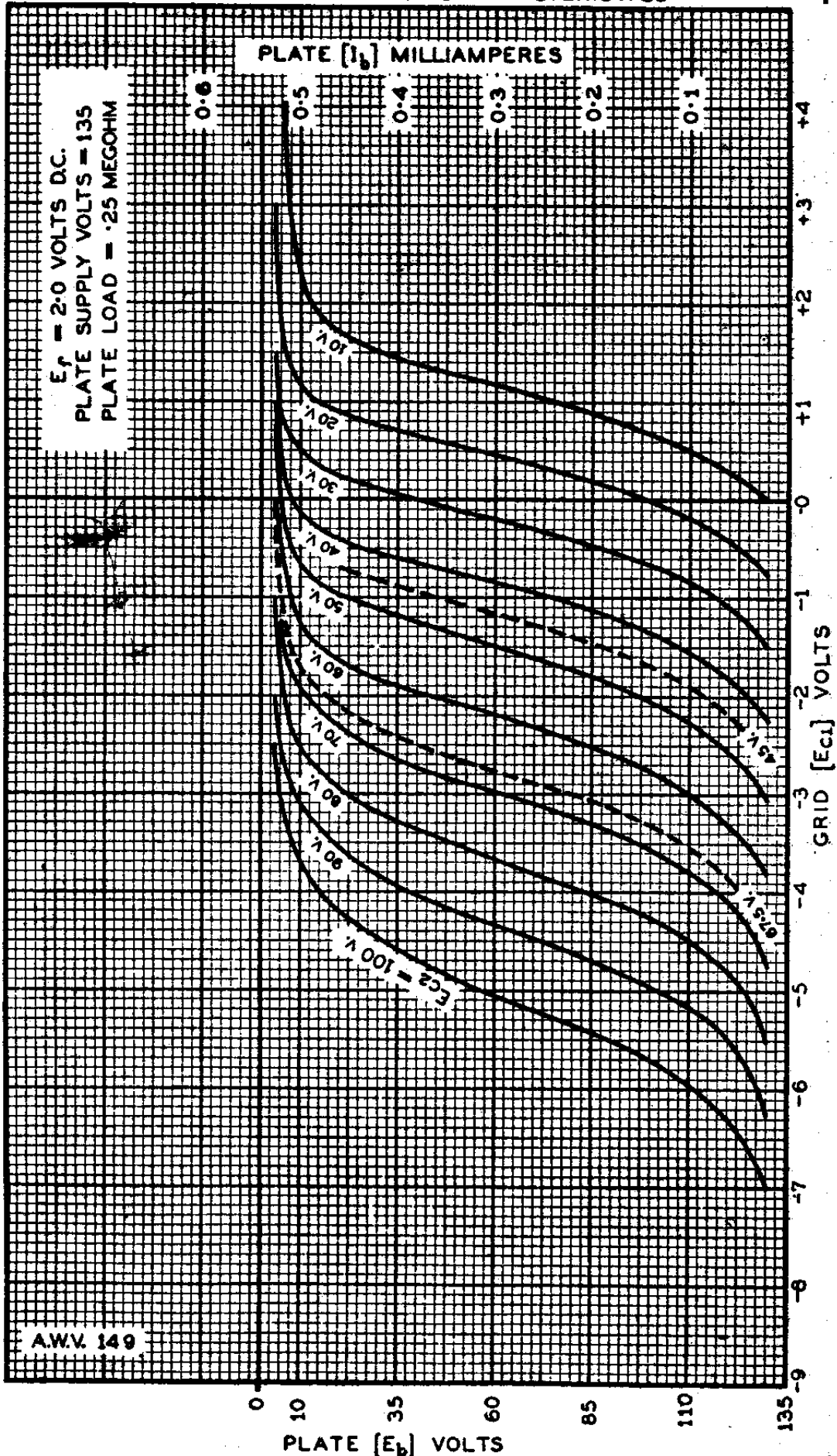


# RADIOTRON

1K5-G

## AVERAGE DYNAMIC CHARACTERISTICS

1K5-G  
SHEET 4





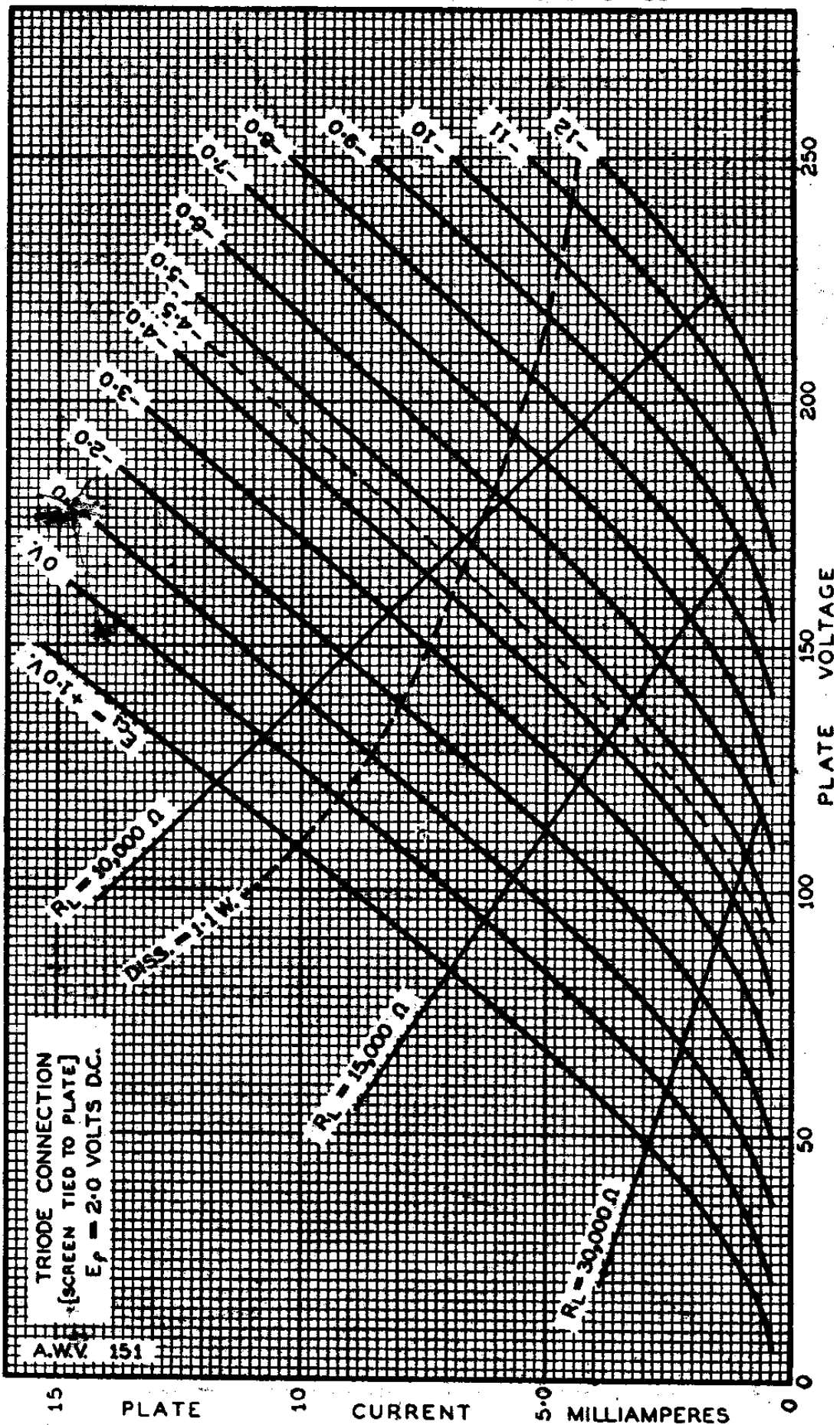


# RADIOTRON

1K5-G

## AVERAGE TRIODE CHARACTERISTICS

1K5-G  
SHEET 5

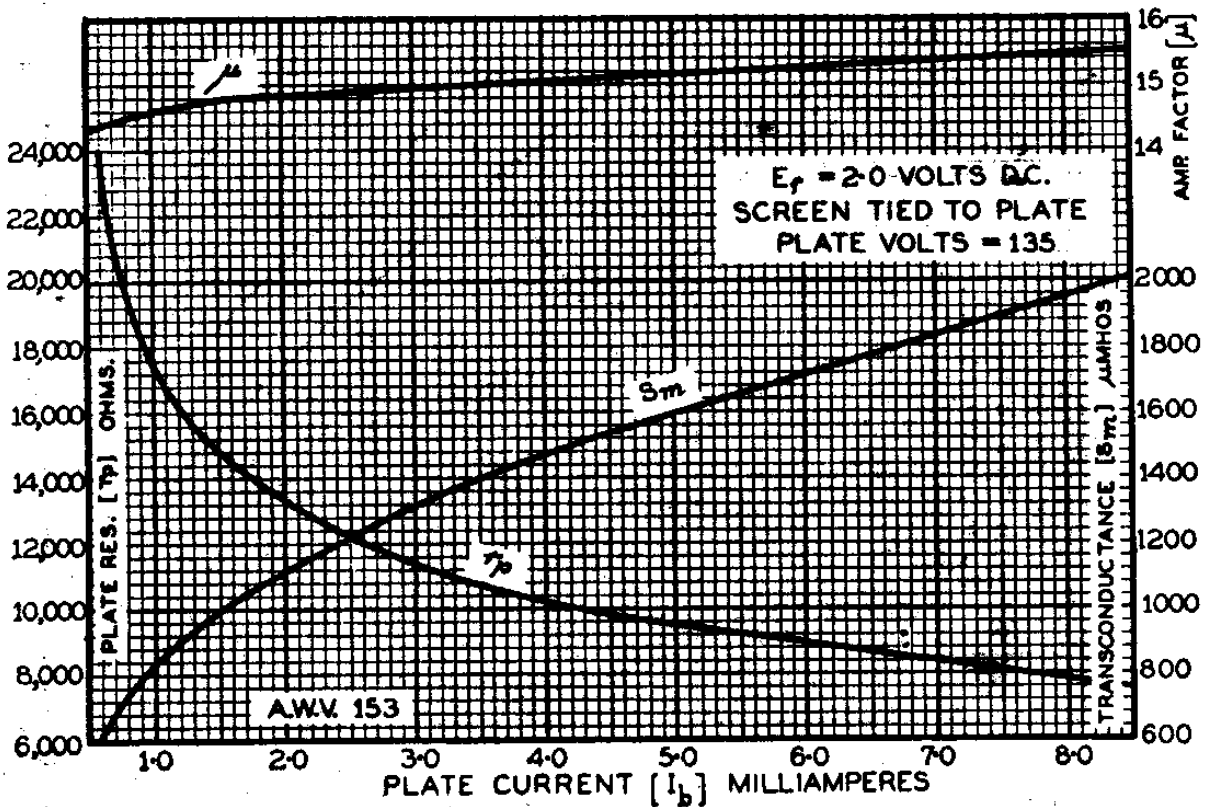
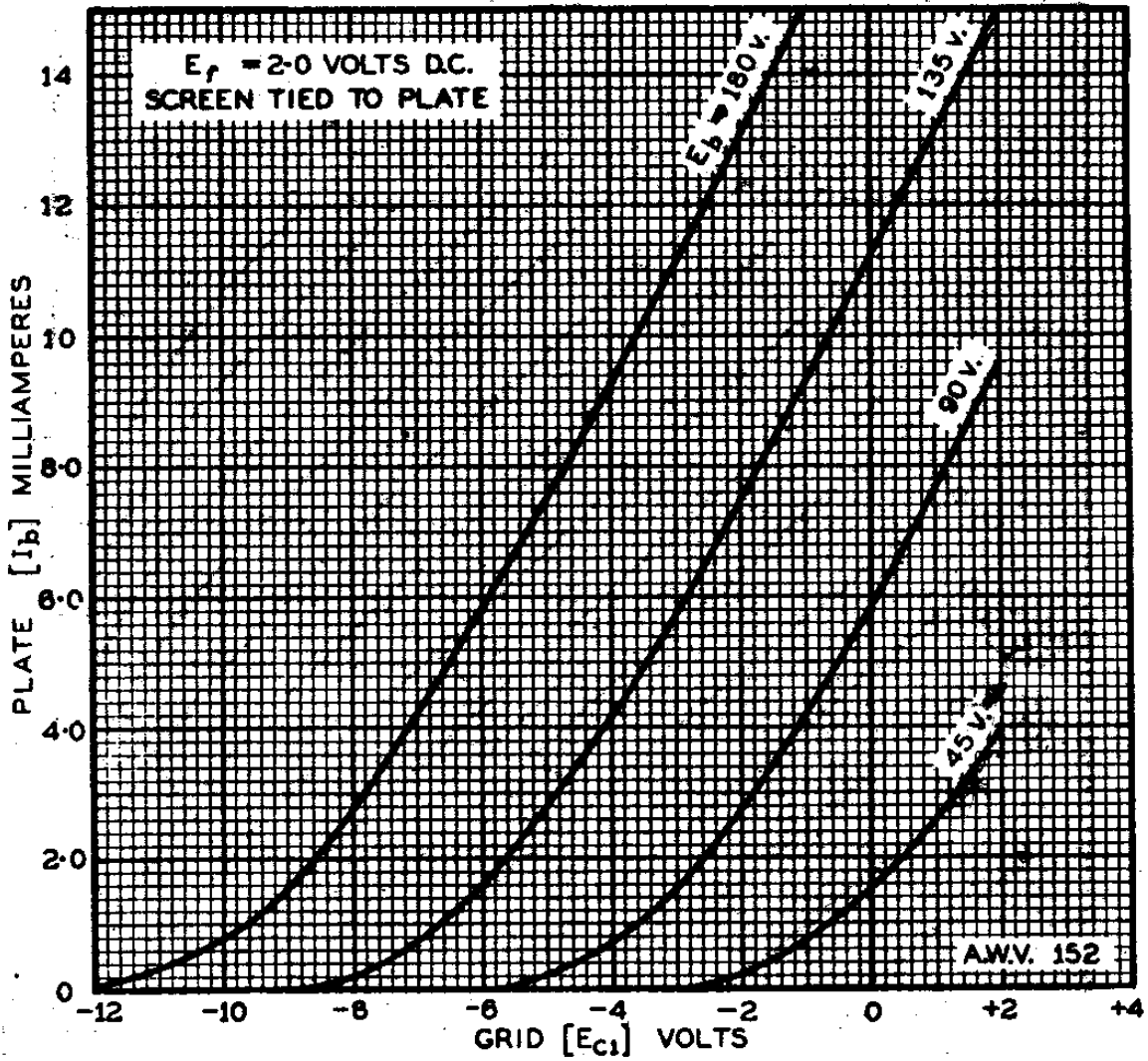


1K5-G

# 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  
Pin 1-Filament +  
Pin 2-Plate  
Pin 3-Diode Plate # 2



Small 6-Pin  
Pin 4-Diode Plate #1  
Pin 5-Screen  
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

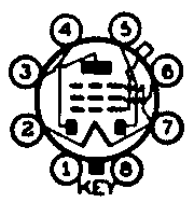


### DUO-DIODE PENTODE

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Direct Interelectrode Capacitances - Pentode Unit*:		
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  
Pin 1-No Connection  
Pin 2-Filament +  
Pin 3-Pentode Plate  
Pin 4-Diode Plate # 2  
Pin 5-Diode Plate # 1



Small Shell Octal 8-Pin  
Pin 6-Pentode Screen  
Pin 7-Filament -  
Pin 8-No Connection  
Cap -Pentode Grid

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	-8		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.

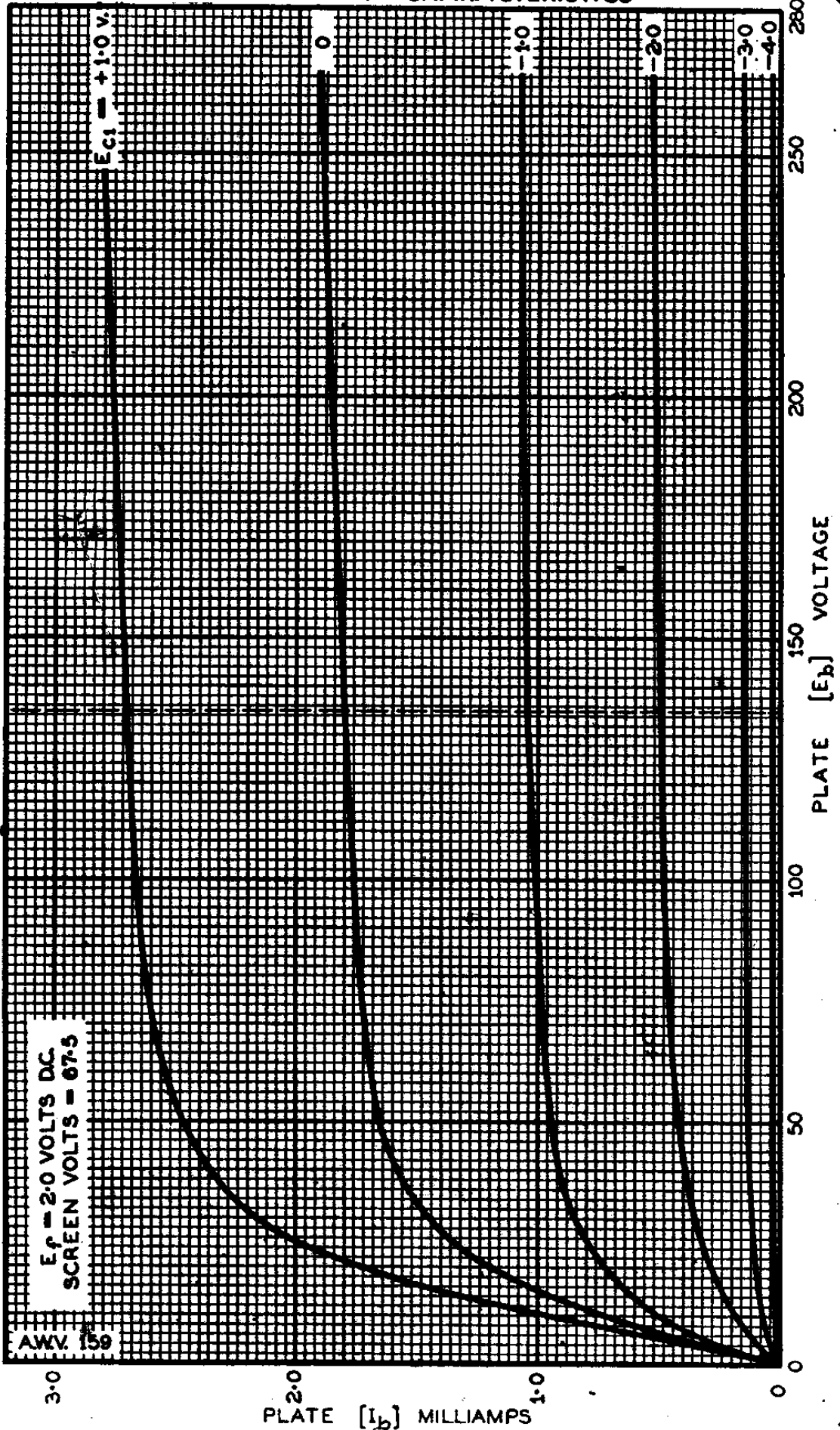
# Screen connected to plate.

# RADIOTRON

1K7-G

## AVERAGE PLATE CHARACTERISTICS

1K7-G  
SHEET 2



$E_f = 2.0$  VOLTS DC  
SCREEN VOLTS = 67.5

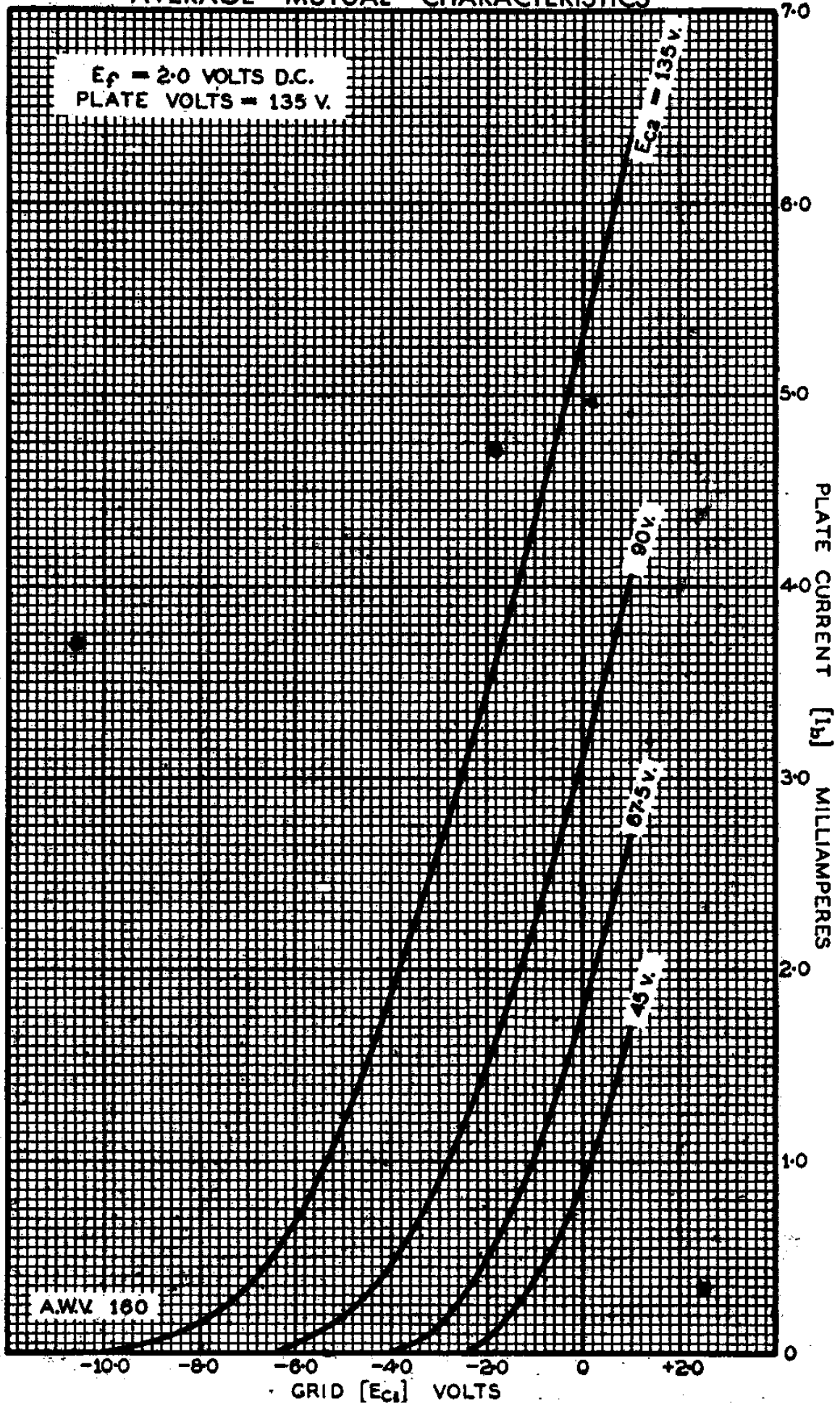
AWV 159

1K7-G

# RADIOTRON

1K7-G

## AVERAGE MUTUAL CHARACTERISTICS

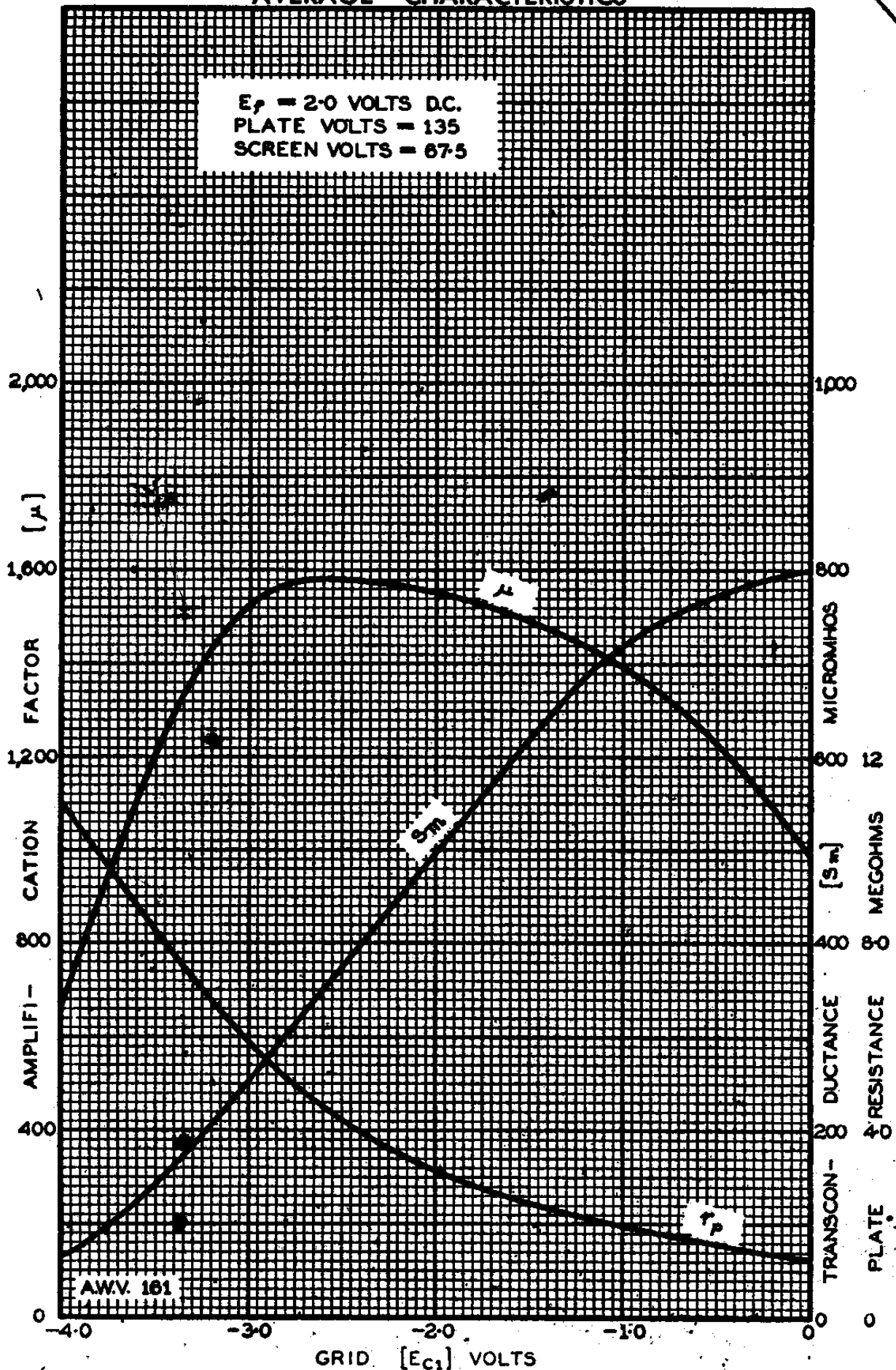


# RADIOTRON

1K7-G

AVERAGE CHARACTERISTICS

1K7-G  
SHEET 3



AWV. 161

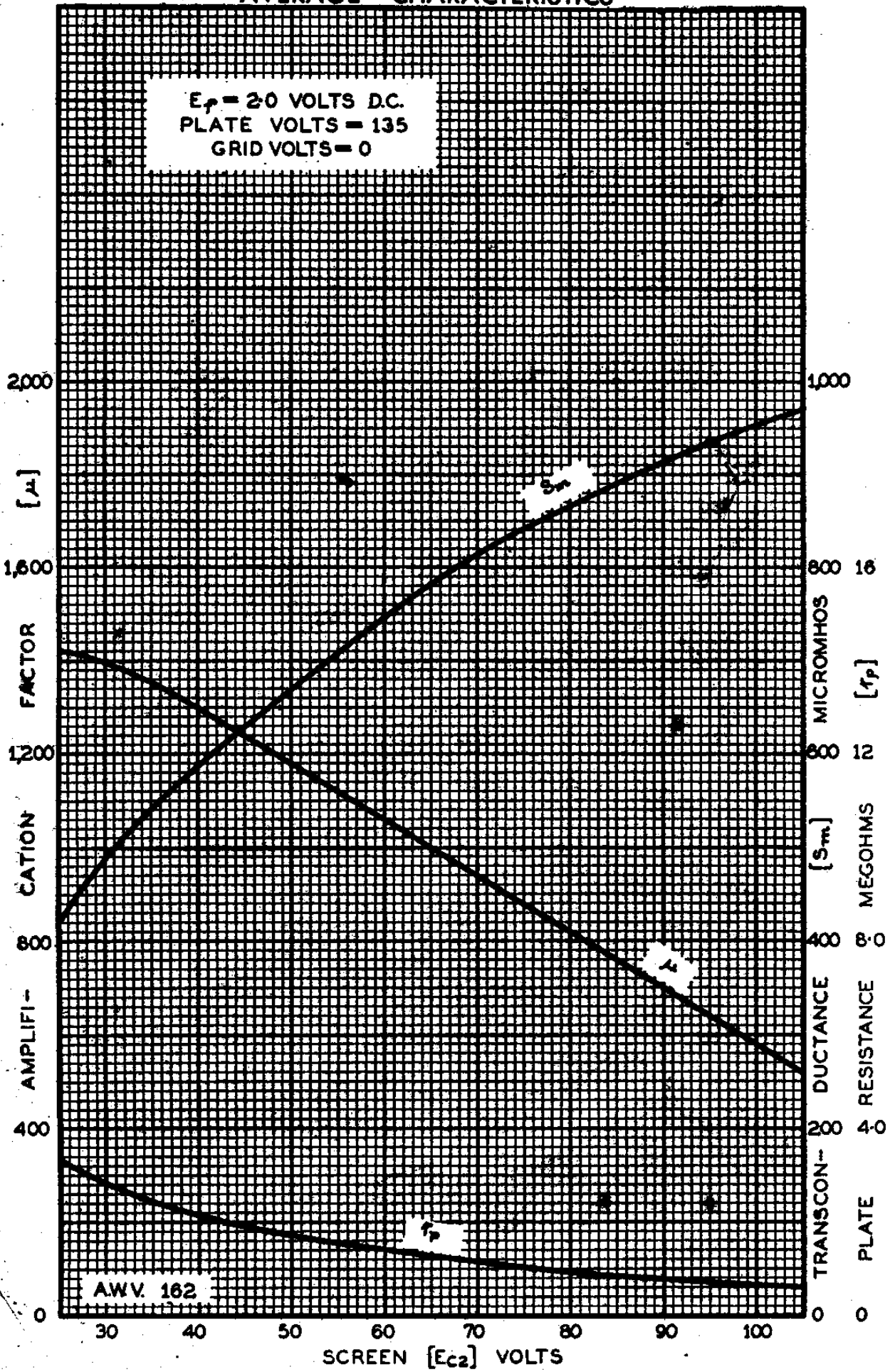


1K7-G

# RADIOTRON

1K7-G

## AVERAGE CHARACTERISTICS

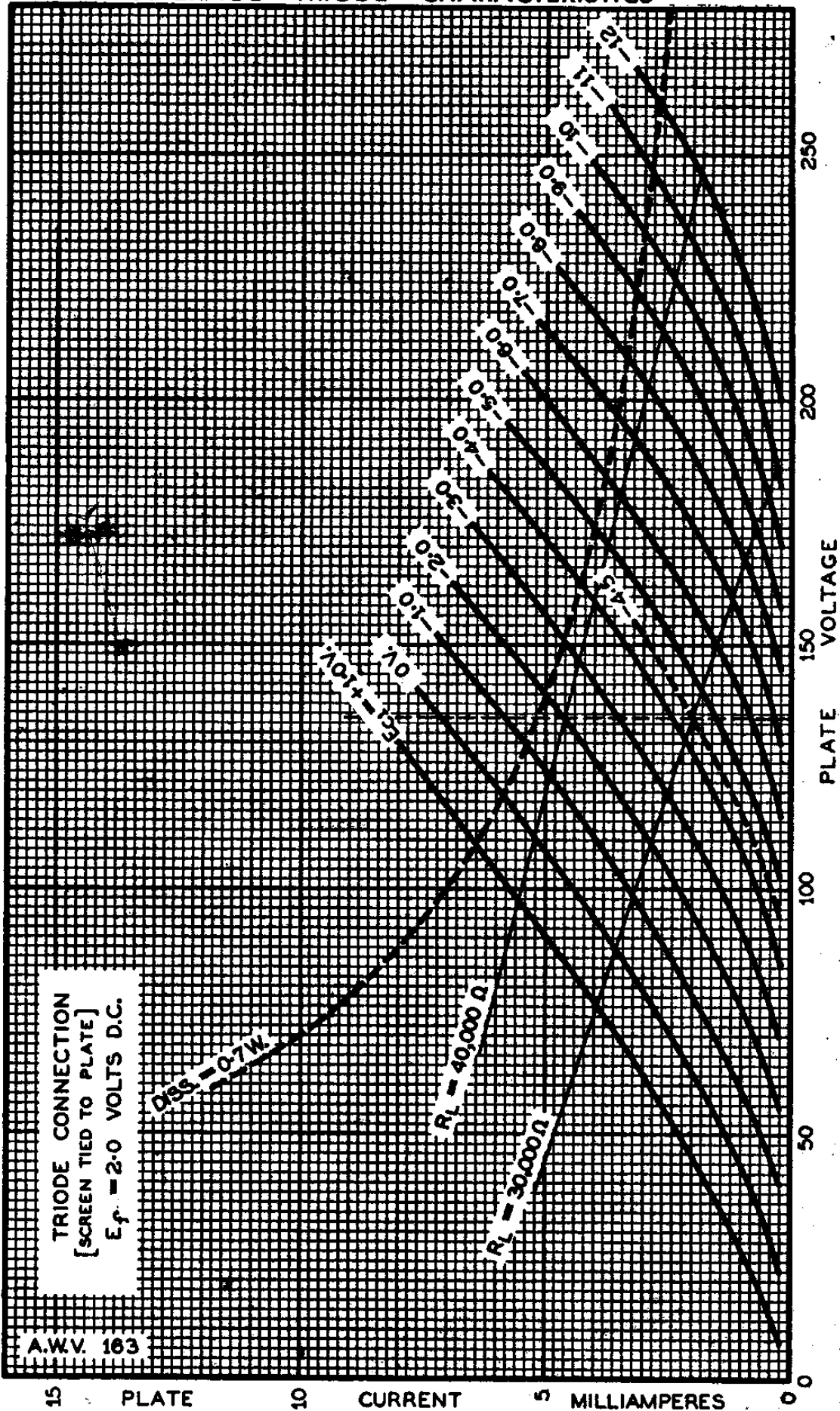


# RADIOTRON

1K7-G

## AVERAGE TRIODE CHARACTERISTICS

1K7-G  
SHEET 4

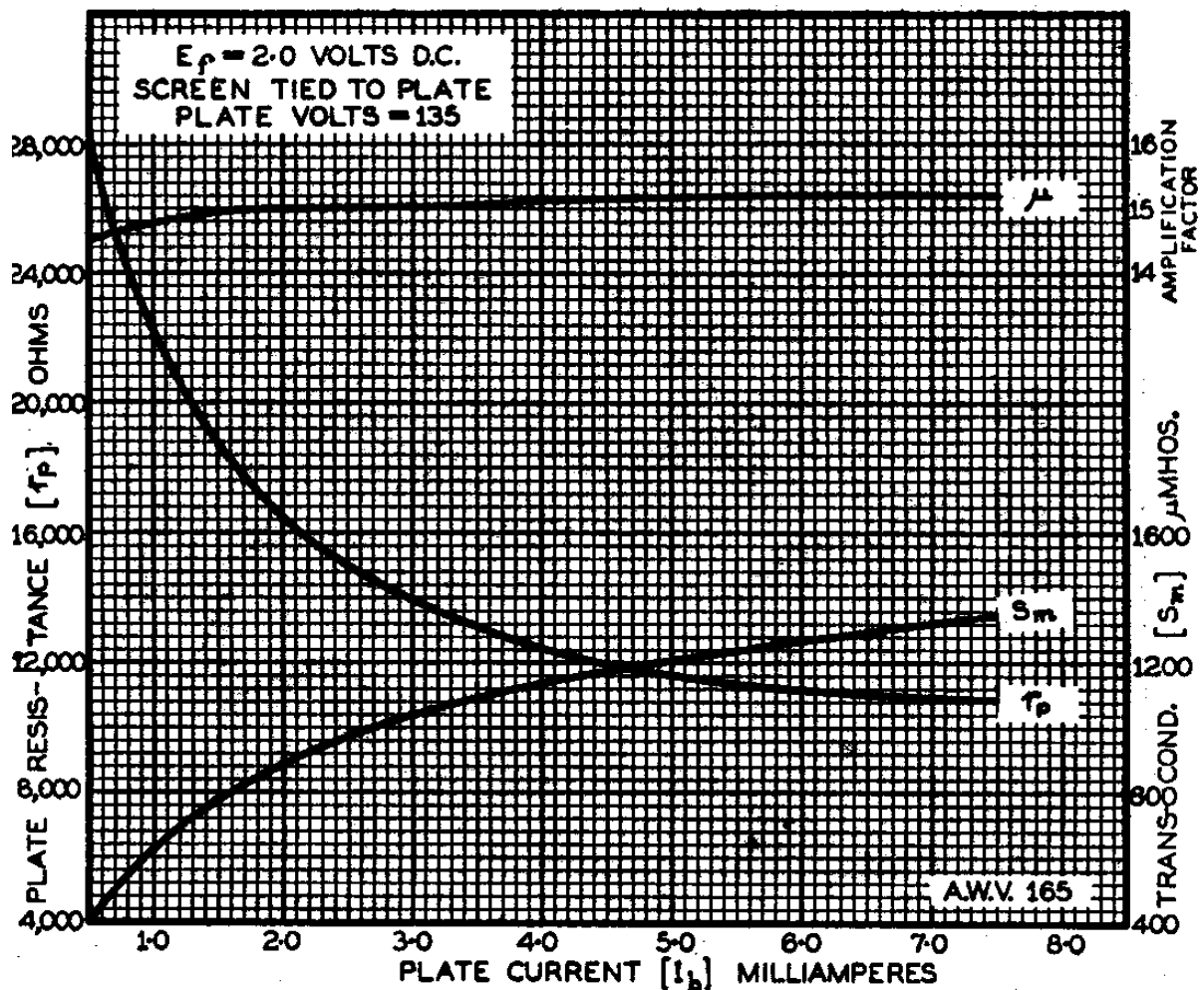
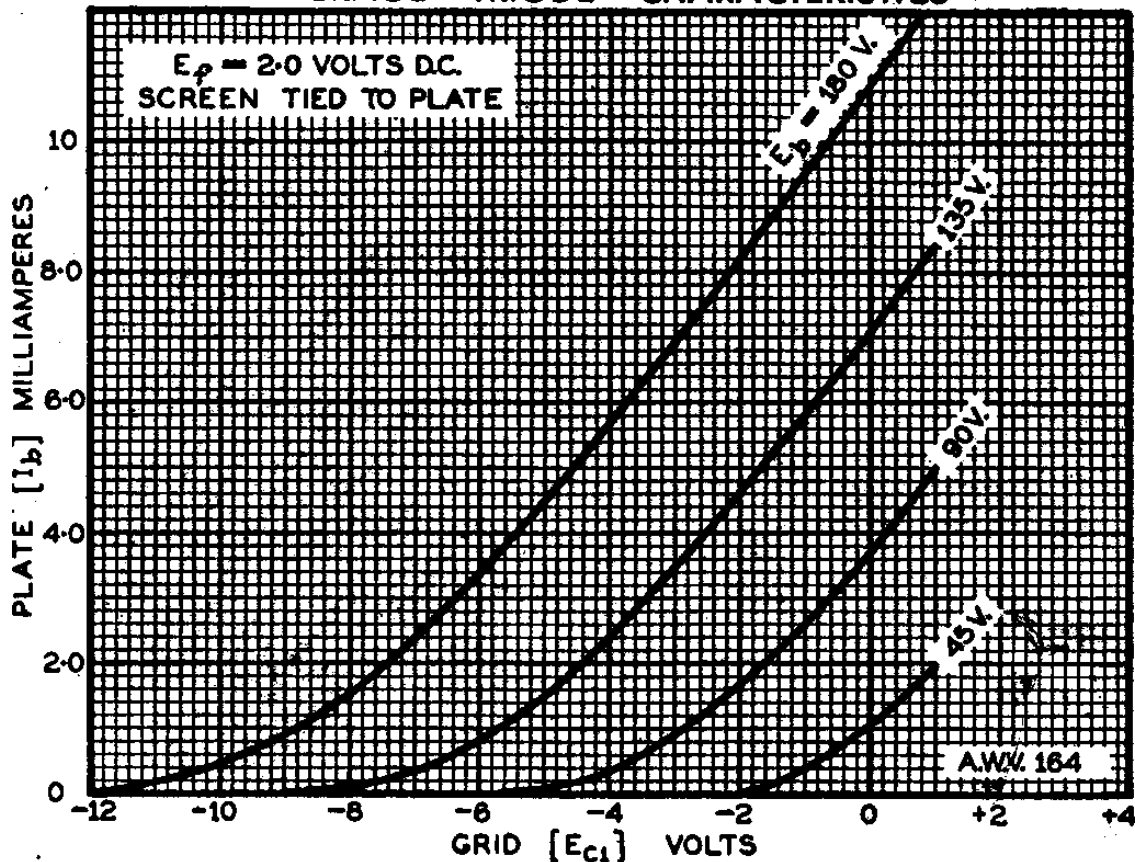


1K7-G

# RADIOTRON

1K7-G

## AVERAGE TRIODE CHARACTERISTICS



# RADIOTRON

## 1L5-G

### POWER AMPLIFIER PENTODE



1L5-G

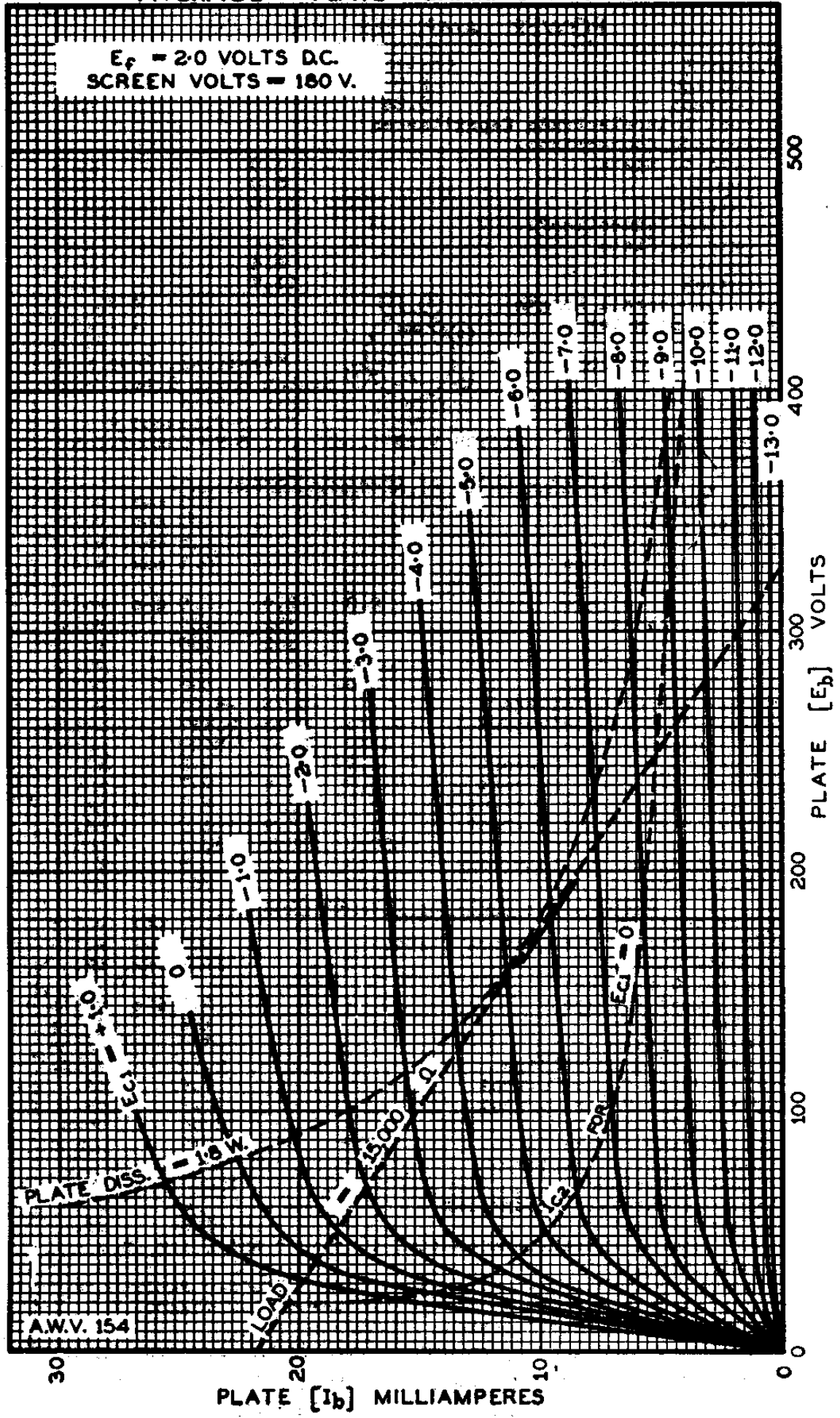
Filament	Coated			
Voltage	2.0			d-c volts
Current	0.24			amp.
Direct Interelectrode Capacitances				
Pentode Connection:-				
Grid to Plate	1.0			μF.
Input	8.0			μF.
Output	11.0			μF.
Triode Connection#:-				
Grid to Plate	2.6			μF.
Input	6.4			μF.
Output	13.7			μF.
Maximum Overall Length				4-21/32"
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)				
<b>AMPLIFIER - CLASS A<sub>1</sub> (Pentode Connection)</b>				
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	μmhos
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.
<b>AMPLIFIER - CLASS A<sub>1</sub> (Triode Connection)#</b>				
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 μmhos
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

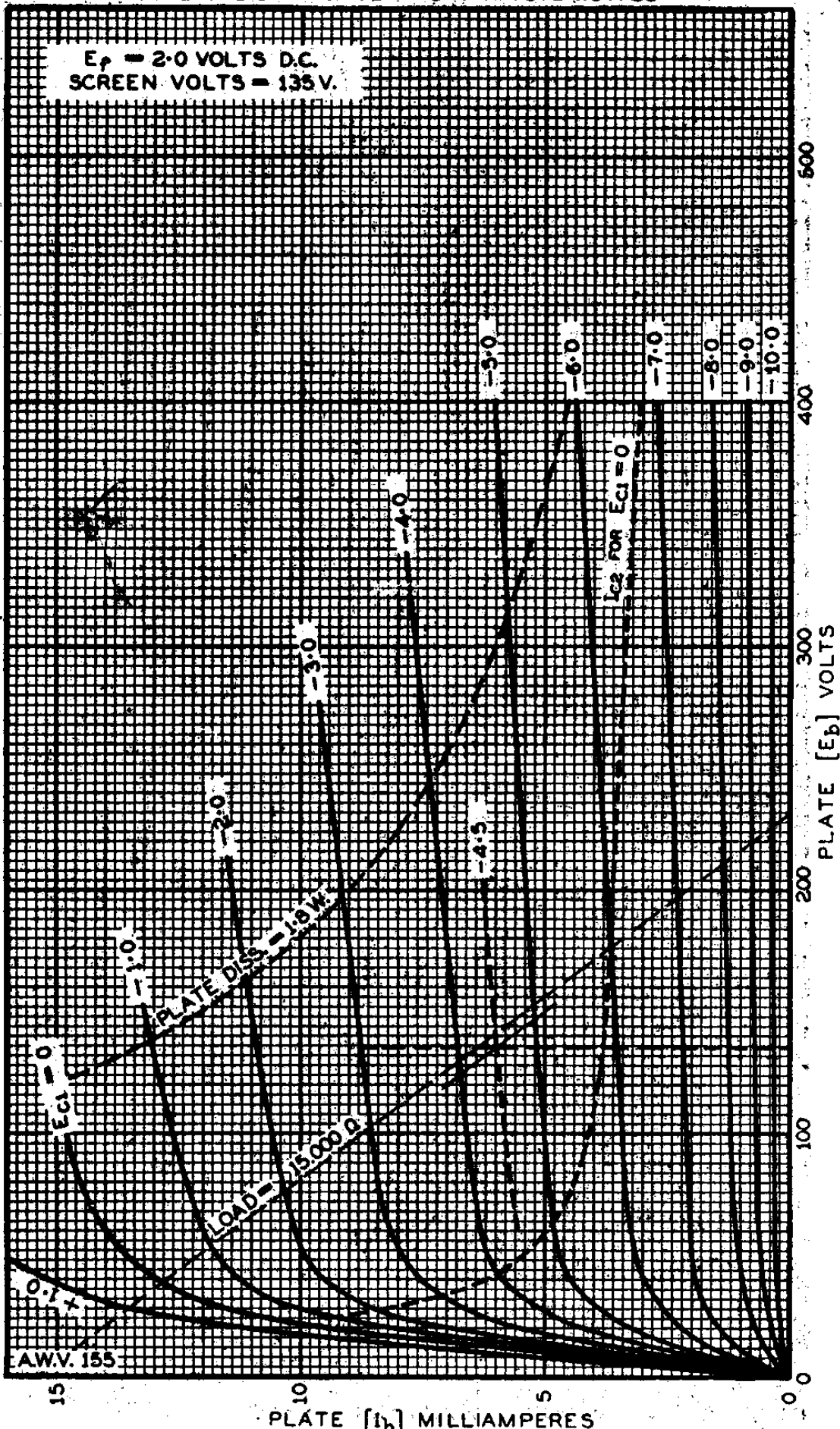


# RADIOTRON

1L5-G

## AVERAGE PLATE CHARACTERISTICS

1L5-G  
SHEET 2

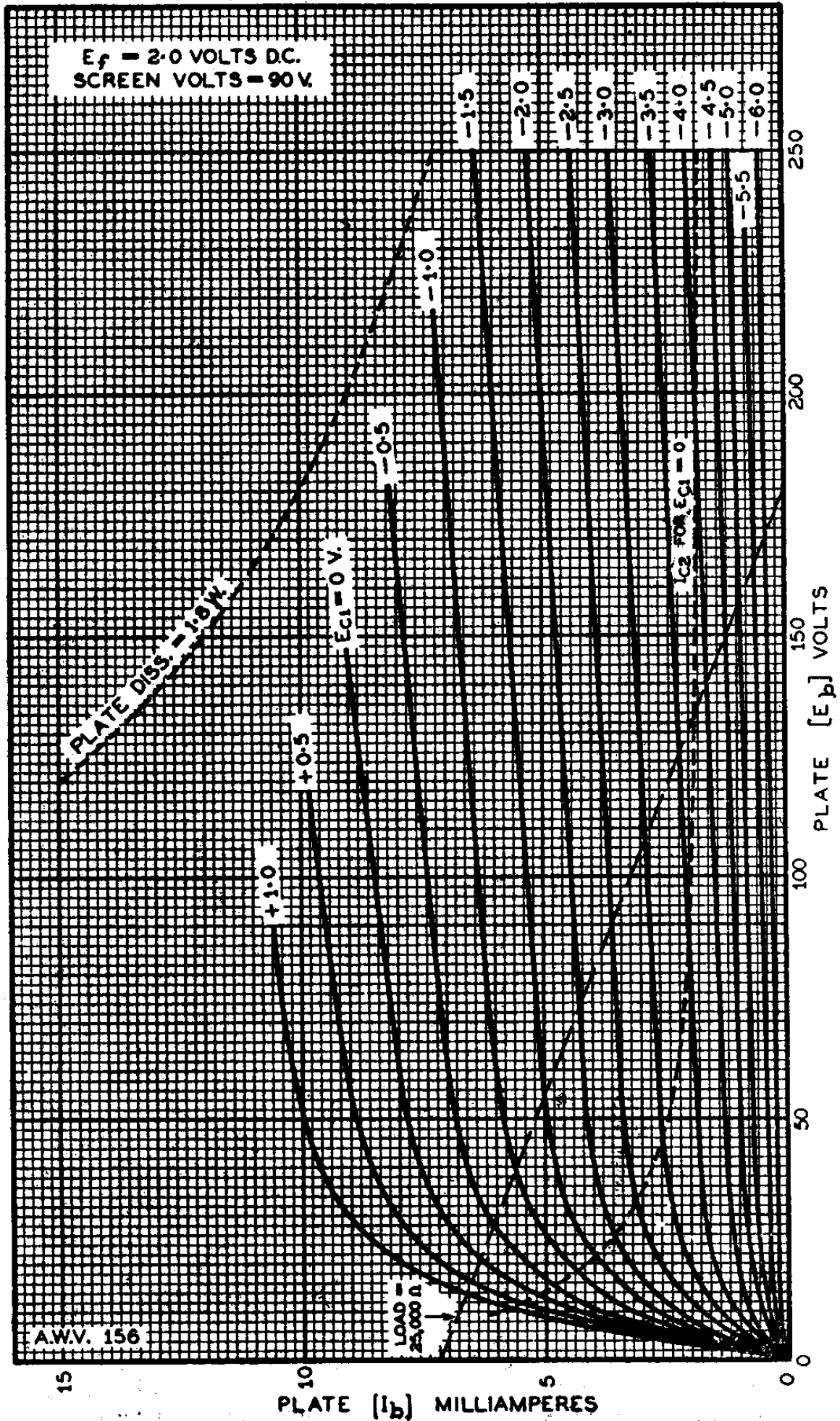


1L5-G

# RADIOTRON

1L5-G

## AVERAGE PLATE CHARACTERISTICS

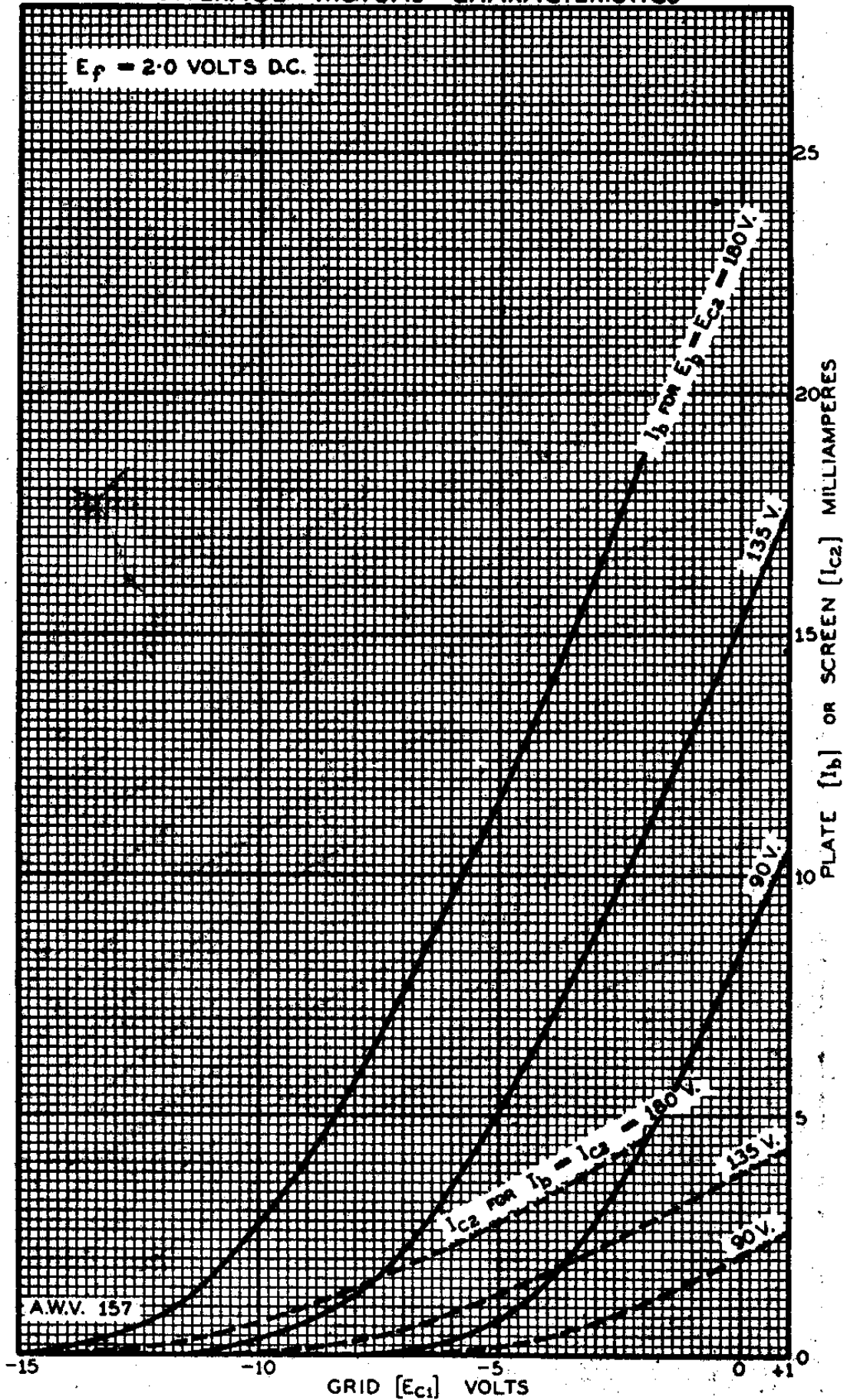


# RADIOTRON

1L5-G

1L5-G  
SHEET 3

## AVERAGE MUTUAL CHARACTERISTICS



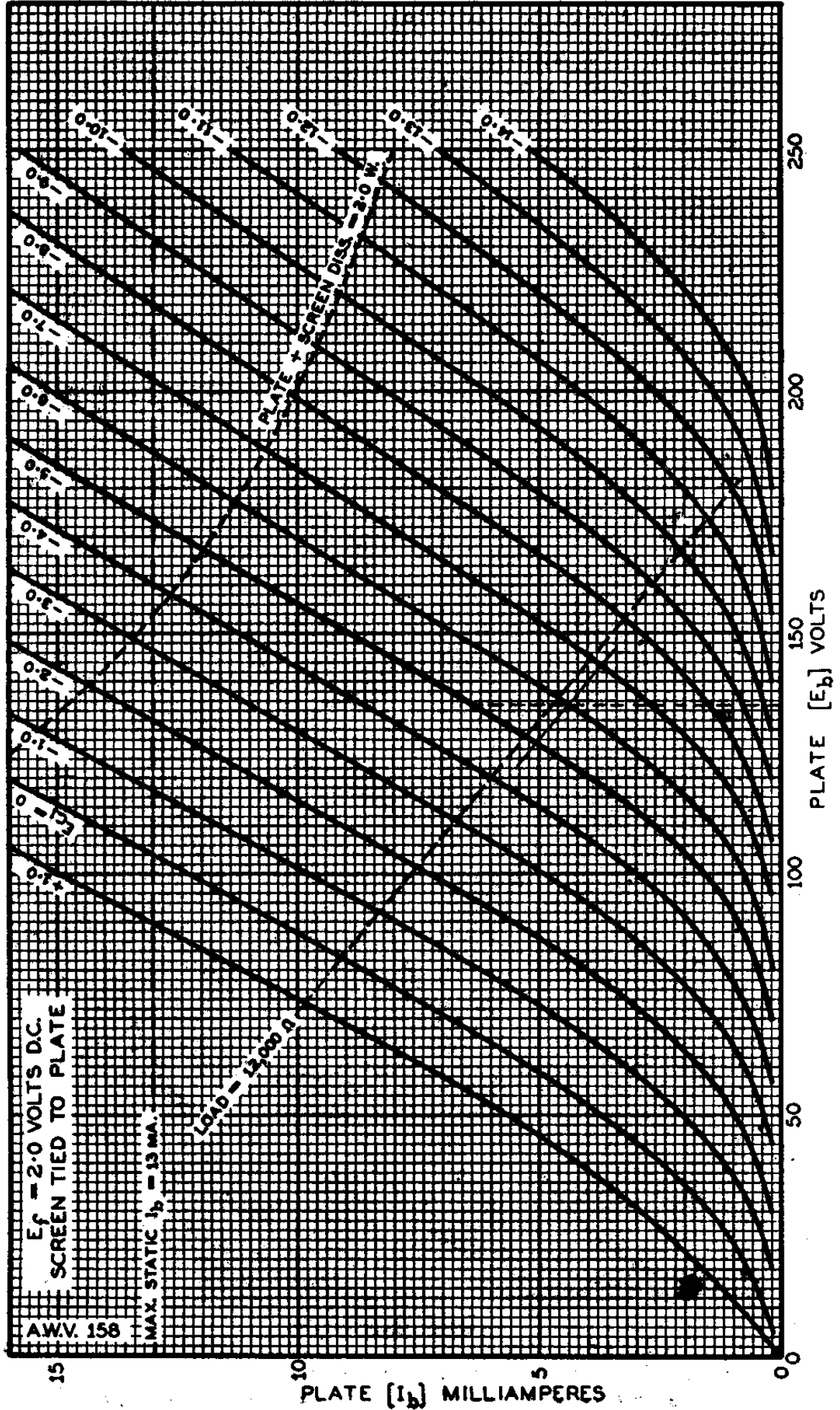


1L5-G

# RADIOTRON

1L5-G

## AVERAGE TRIODE CHARACTERISTICS



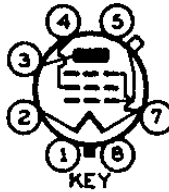
# RADIOTRON

## 1M5-G

### SUPER CONTROL R.F. AMPLIFIER PENTODE

1M5-G  
SHEET 1

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



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	$\mu\text{mhos}$
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.

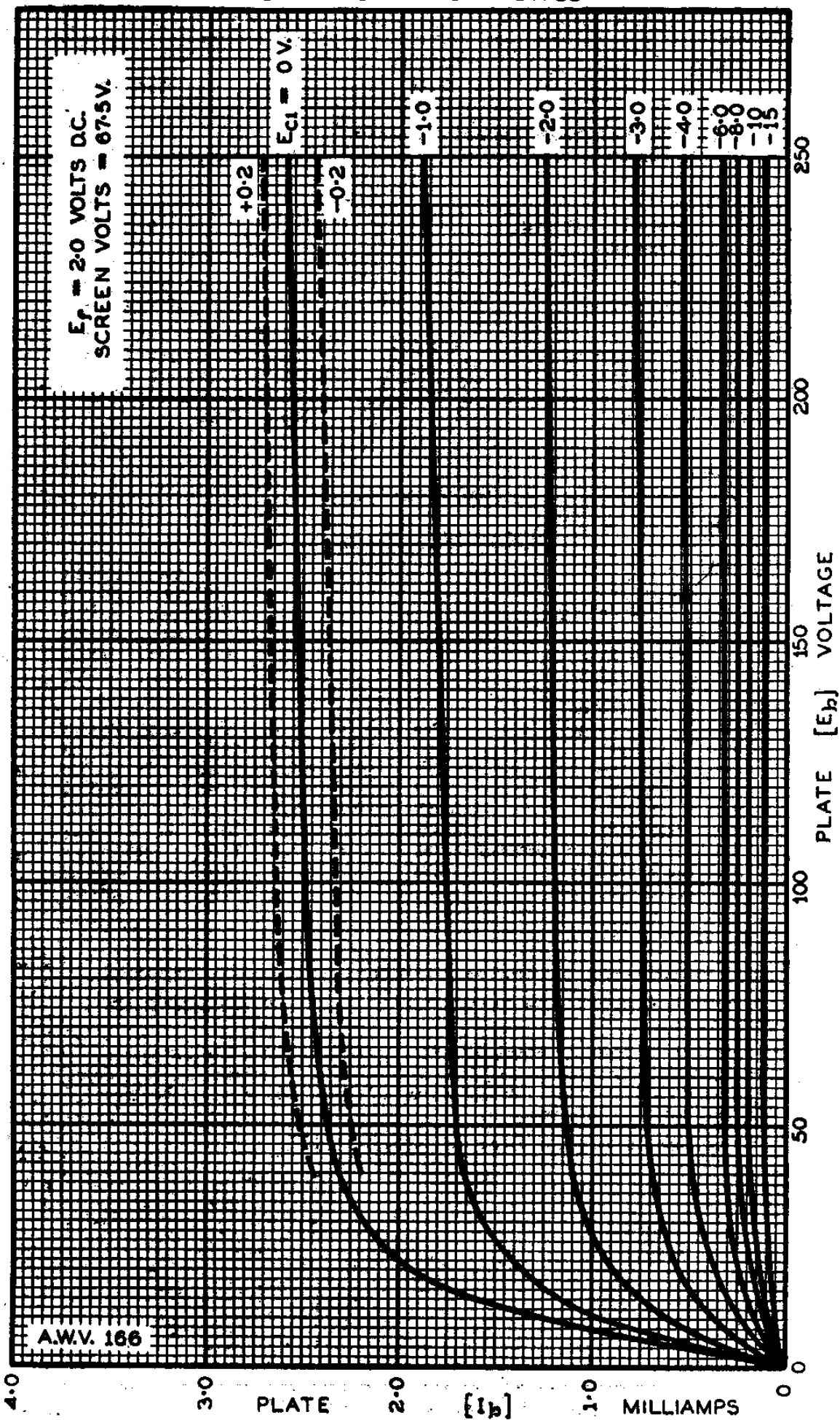
○ For a negative grid bias of -16.0 volts.

1M5-G

# RADIOTRON

1M5-G

## PLATE CHARACTERISTICS

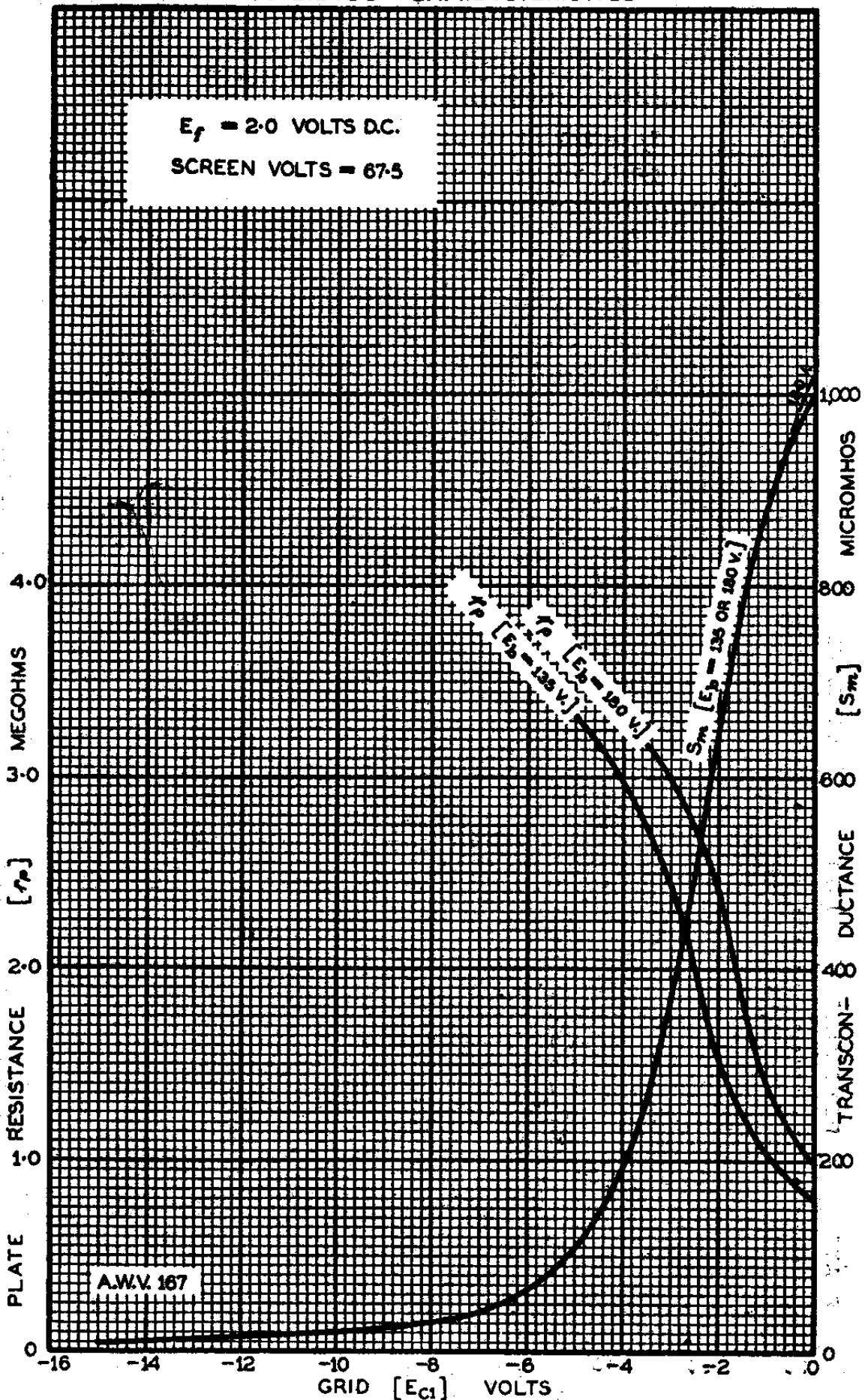


# RADIOTRON

1M5-G

## AVERAGE CHARACTERISTICS

1M5-G  
SHEET 2

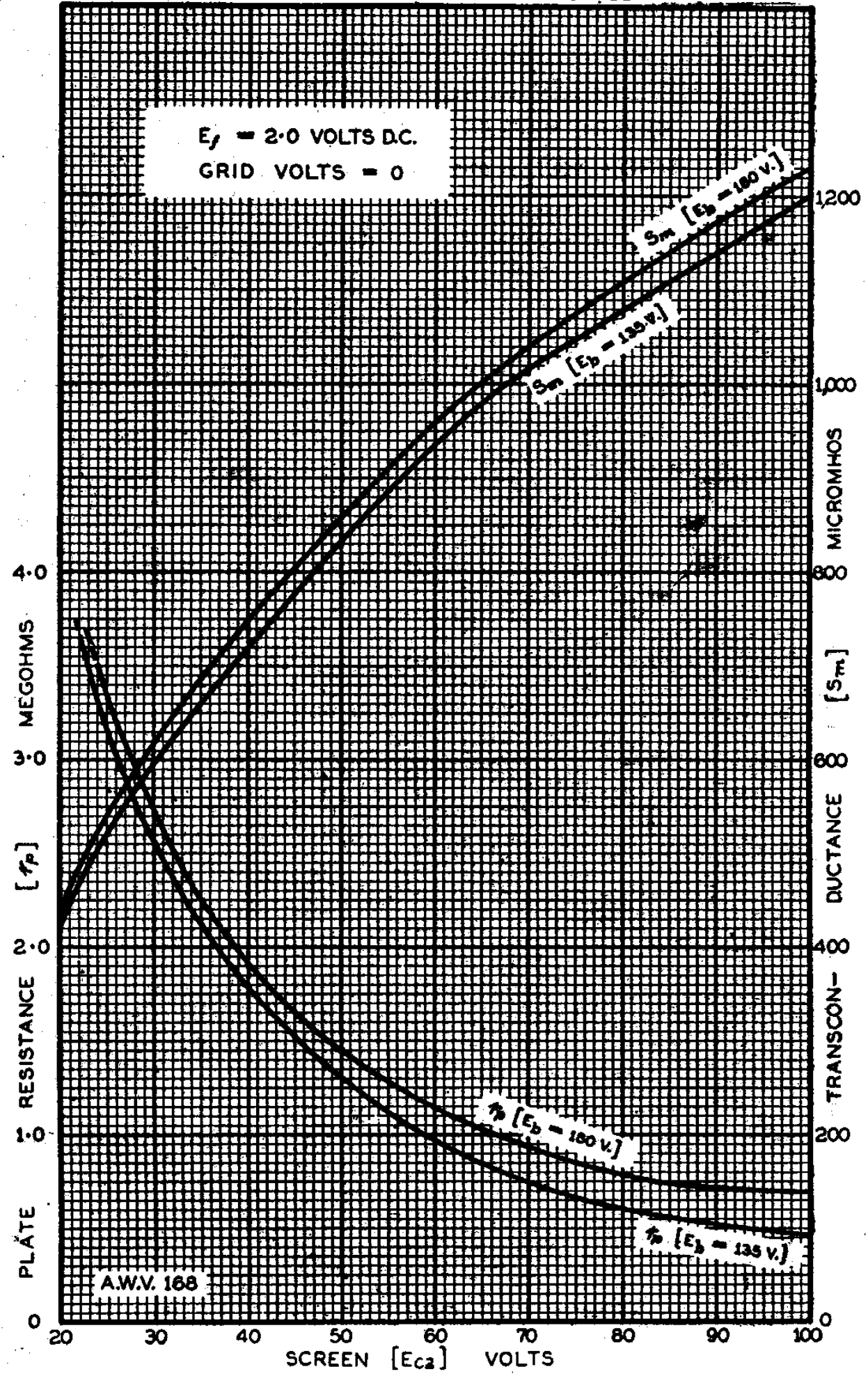


AMALGAMATED WIRELESS VALVE CO. PTY. LTD.  
JULY 1941 SYDNEY, AUSTRALIA

1M5-G

# RADIOTRON

1M5-G  
AVERAGE CHARACTERISTICS



# RADIOTRON

## 1N5-GT



### 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.	μF.
Input	3.2	μF.
Output	10.0	μF.

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	

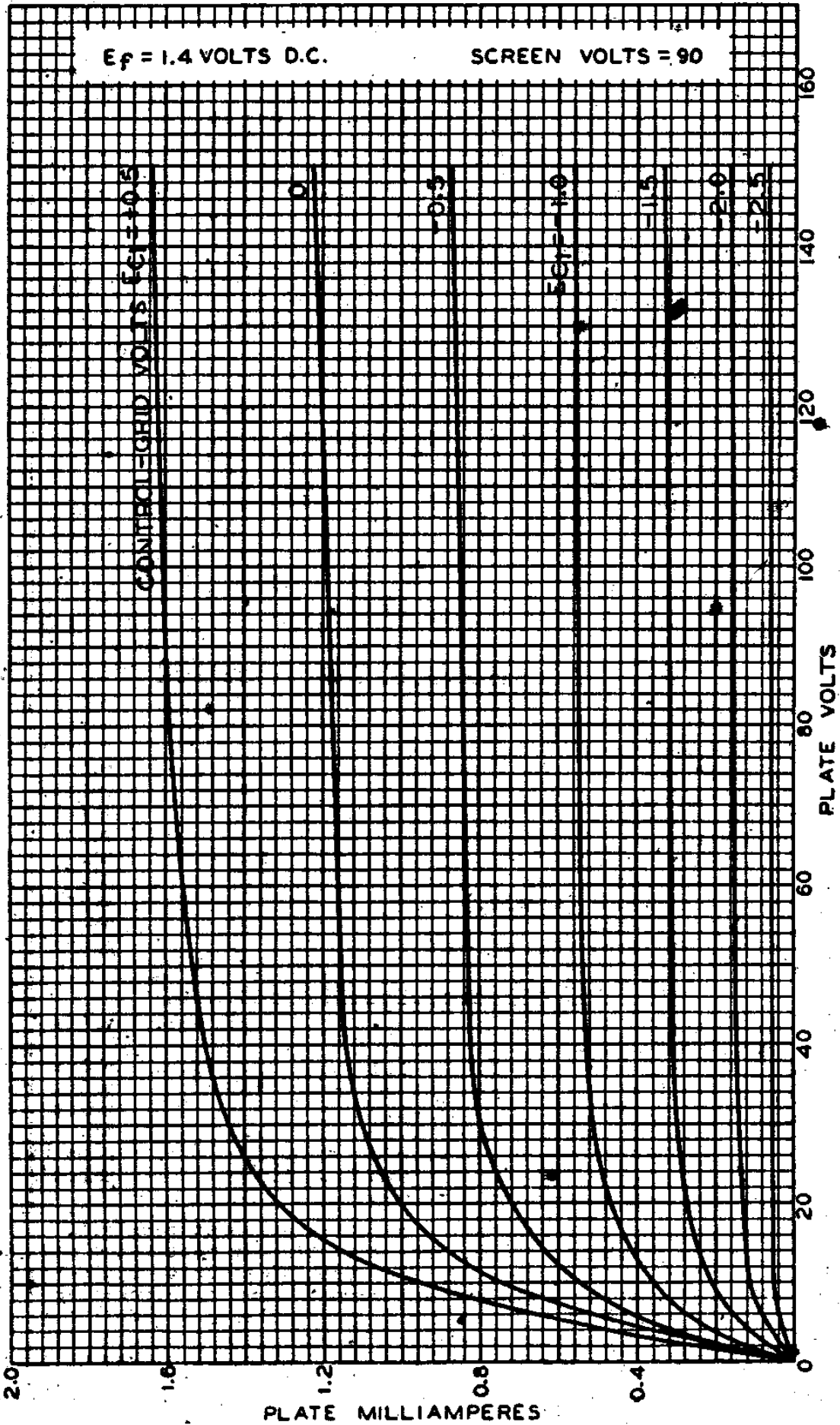
- With shield-can connected to negative filament terminal.
- \* Negative filament return. The grid circuit resistance may be as high as 10 megohms provided that the circuit constants are such that the plate current cannot under any circumstances exceed 1.0 mA. As an A.V.C. controlled R.F. amplifier the 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.
- <sup>#</sup> Screen connected to plate at socket.

1N5-GT

# RADIOTRON

1N5-GT

## AVERAGE PLATE CHARACTERISTICS



# RADIOTRON

1P5-GT



## SUPER CONTROL R. F. AMPLIFIER PENTODE

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

Direct Interelectrode Capacitances:<sup>0</sup>

Grid to Plate	0.007 max. μf
Input	3.0 μf
Output	10 μf

Maximum Overall Length 3-15/32"

Maximum Seated Height 2-29/32"

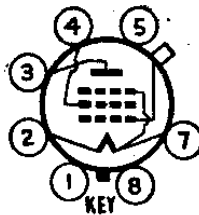
Maximum Diameter 1-5/16"

Bulb T-9

Cap Skirted Miniature-Style C

Base Intermediate Shell Octal 7-Pin

- Pin 1 - Base Sleeve
- Pin 2 - Filament +
- Pin 3 - Plate
- Pin 4 - Screen



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

Mounting Position Any

BOTTOM VIEW (GT-5Y)

AMPLIFIER

Plate Voltage 110 max. volts

Screen Voltage 110 max. volts

Typical Operation and Characteristics - Class A<sub>1</sub> Amplifier:

Plate	90	volts
Screen	90	volts
Grid	0	volts
Plate Res. (approx.)	0.8	megohm
Transcond.	800	μmhos
Grid Bias for Transcond. of 10 μmhos (approx.)	-12	volts
Plate Cur.	2.3	ma.
Screen Cur.	0.7	ma.

<sup>0</sup> With close-fitting shield connected to negative filament terminal.

The filament voltage should preferably be maintained within the limits of 1.25 and 1.4 volts. Under no circumstances should the filament voltage exceed, even temporarily, 1.54 volts.

← Indicates a change.

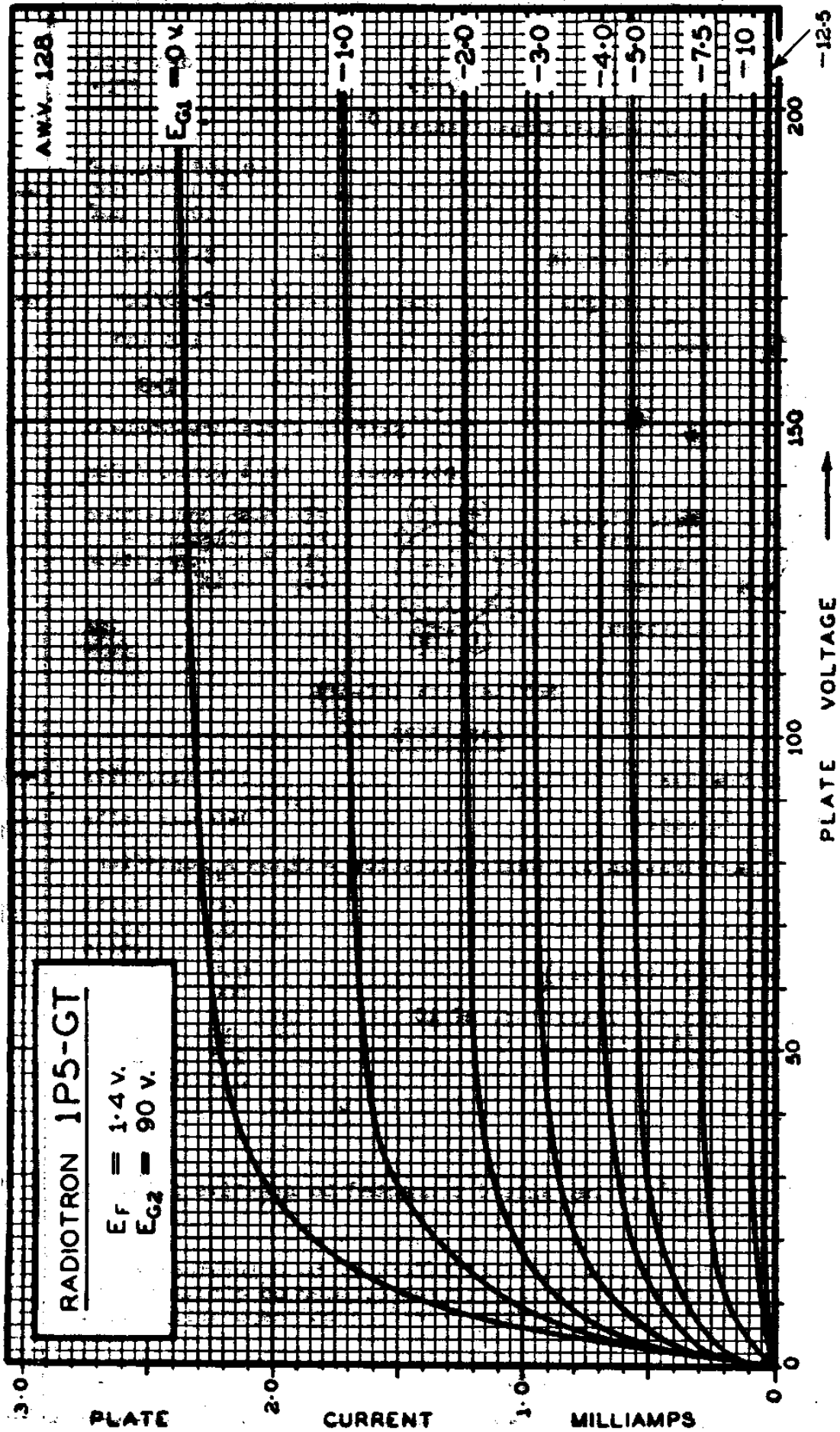


1P5-GT

# RADIOTRON

1P5-GT

## OPERATION CHARACTERISTICS



# RADIOTRON

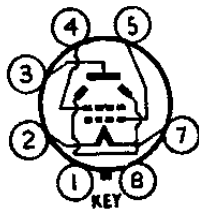
1Q5-GT

BEAM POWER AMPLIFIER

Filament Voltage	Coated 1.4	d-c volts
Filament Current	0.1	amp.
Maximum Overall Length		3-5/16"
Maximum Seated Height		2-3/4" ←
Maximum Diameter		1-5/16" ←
Bulb		T-9

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

- Intermediate Shell Octal 7-Pin
- Pin 5-Grid
  - Pin 7-Filament -
  - Pin 8-No Connection



Mounting Position

Any

BOTTOM VIEW (G-6AF)

AMPLIFIER

Plate Voltage	110 max. volts	←
Screen Voltage	110 max. volts	←
Zero-Signal Cathode Current	12 max. ma.	←

Typical Operation and Characteristics - Class A<sub>1</sub> Amplifier:

Plate	83.5	85	90	volts
Screen	83.5	85	90	volts
Grid	-6.5	-5	-4.5	volts
Peak A-F Grid Voltage	6.5	5	4.5	volts
Zero-Sig. Plate Cur.	5.0	7.0	9.5	ma.
Zero-Sig. Screen Cur.	0.5	0.8	1.3	approx. ma.
Plate Resistance	-	70000	75000	approx. ohms
Transconductance	-	1950	2200	μmhos
Load Resistance	15000	9000	8000	ohms
Total Harmonic Dist.	10	5.5	6.0	%
Max.-Sig. Power Output	140	250	270	mw.

The filament voltage should preferably be maintained within the limits of 1.25 and 1.4 volts. Under no circumstances should the filament voltage exceed, even temporarily, 1.54 volts.

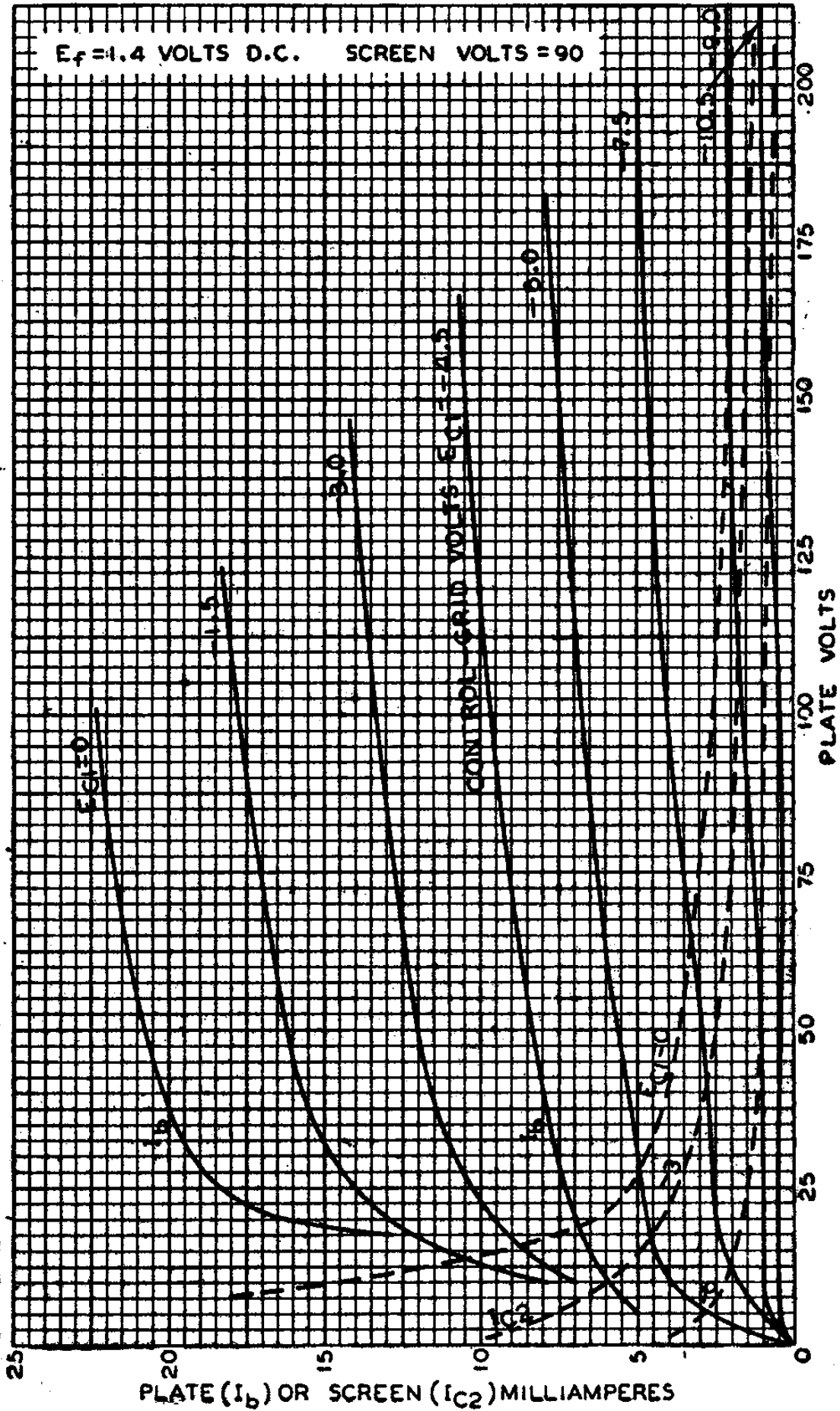
← Indicates a change.

IQ5-GT

# RADIOTRON

IQ5-GT

## AVERAGE PLATE CHARACTERISTICS





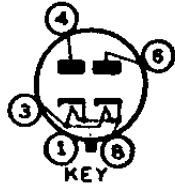
# RADIOTRON

## 5V4-G

### 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.

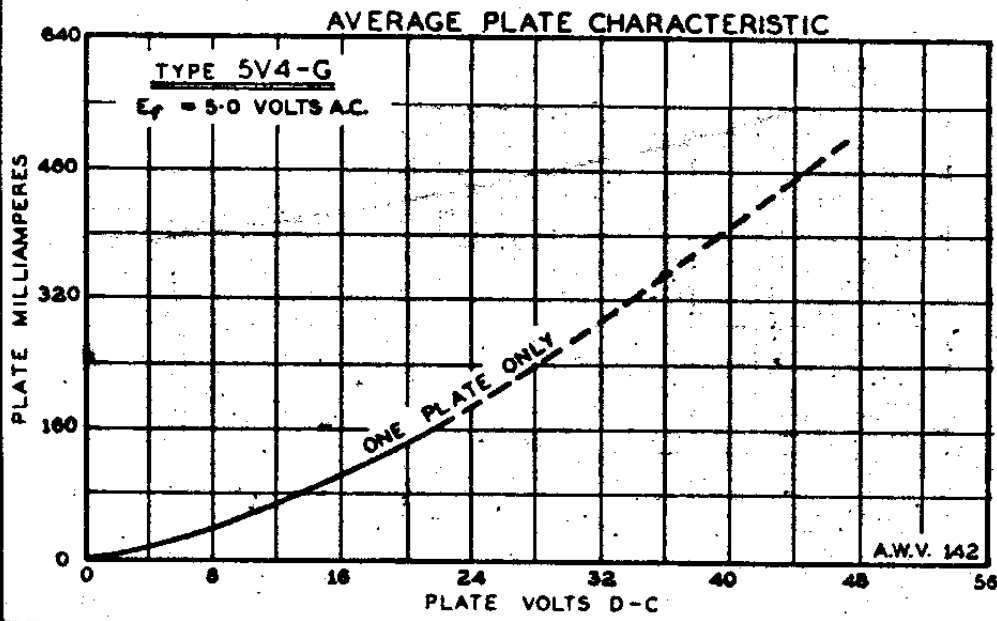
Typical Operation with Condenser-Input Filter:

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.

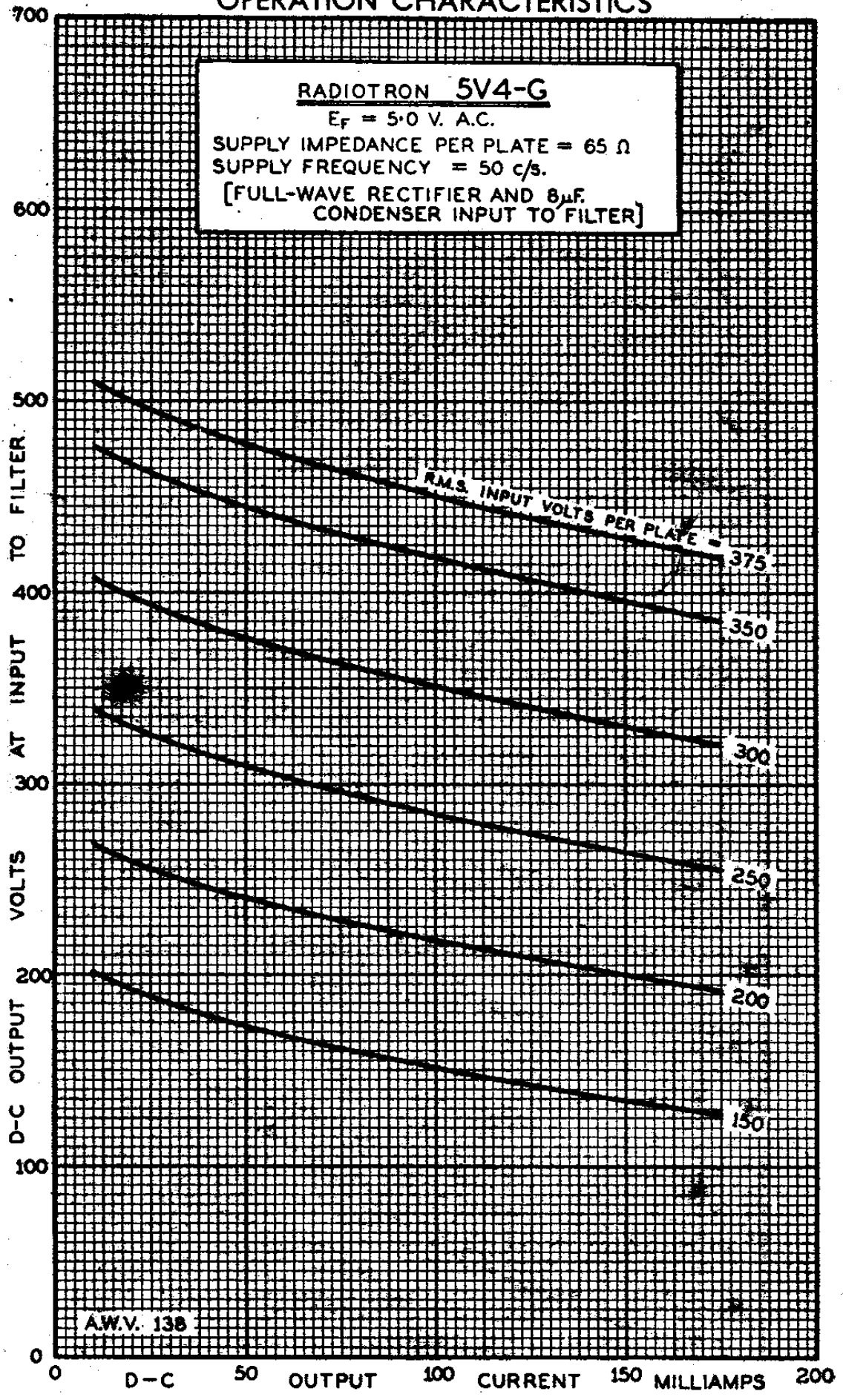
\* With a resistance of 125 ohms (rated at 3 watts) in series with each plate.



5V4-G

# RADIOTRON 5V4-G

## OPERATION CHARACTERISTICS

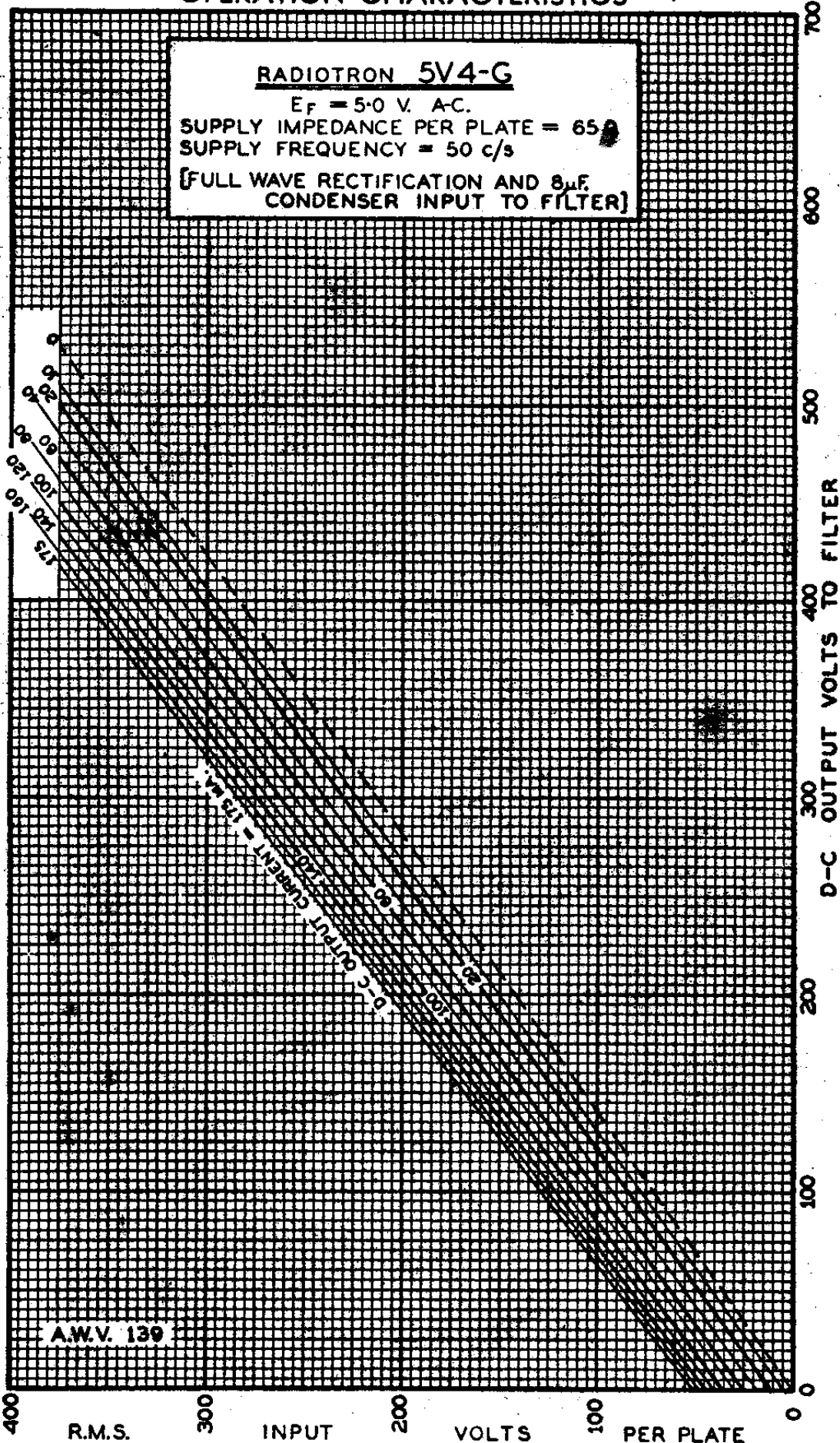


# RADIOTRON

## 5V4-G

### OPERATION CHARACTERISTICS

5V4-G  
SHEET 2

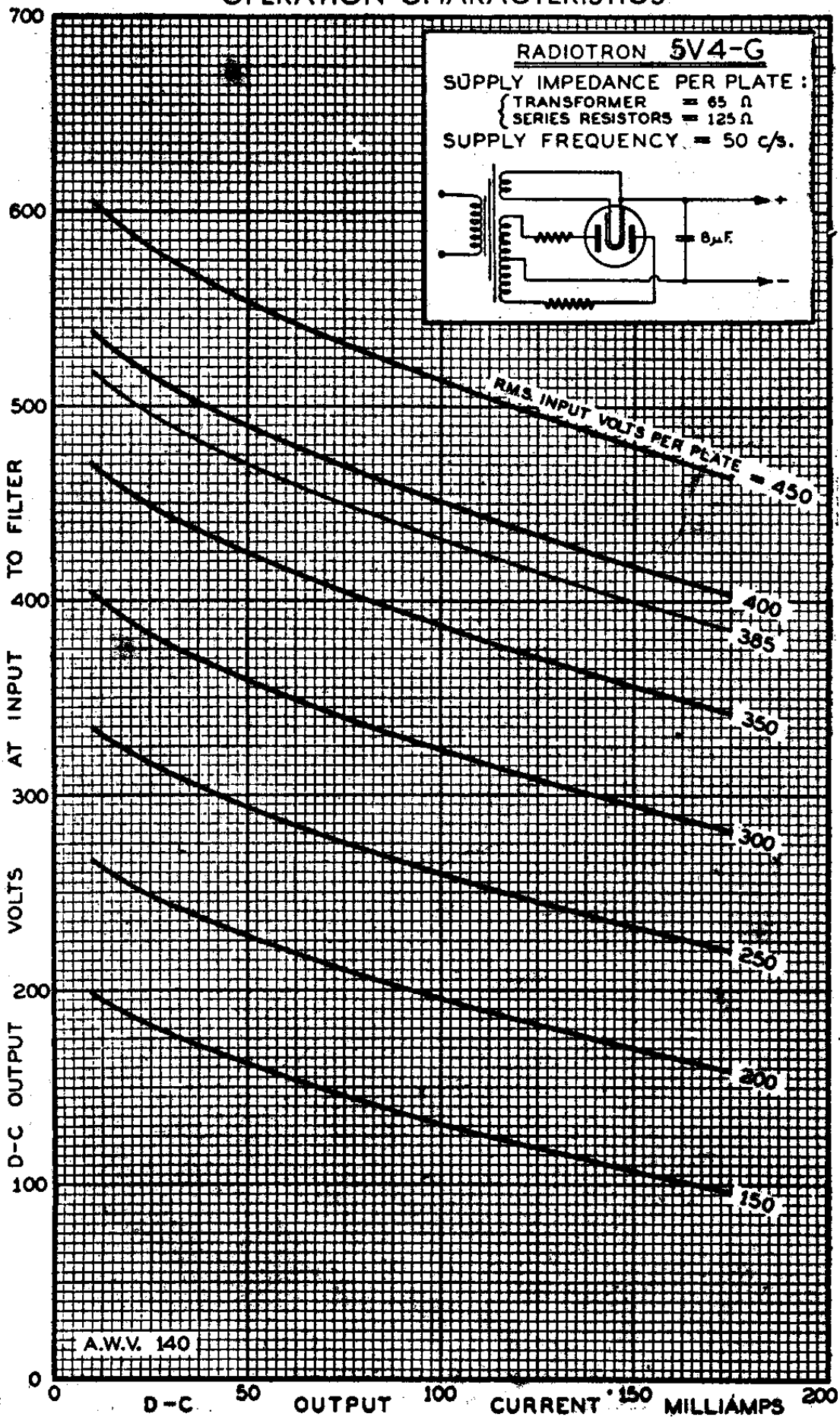


5V4-G

# RADIOTRON

## 5V4-G

### OPERATION CHARACTERISTICS

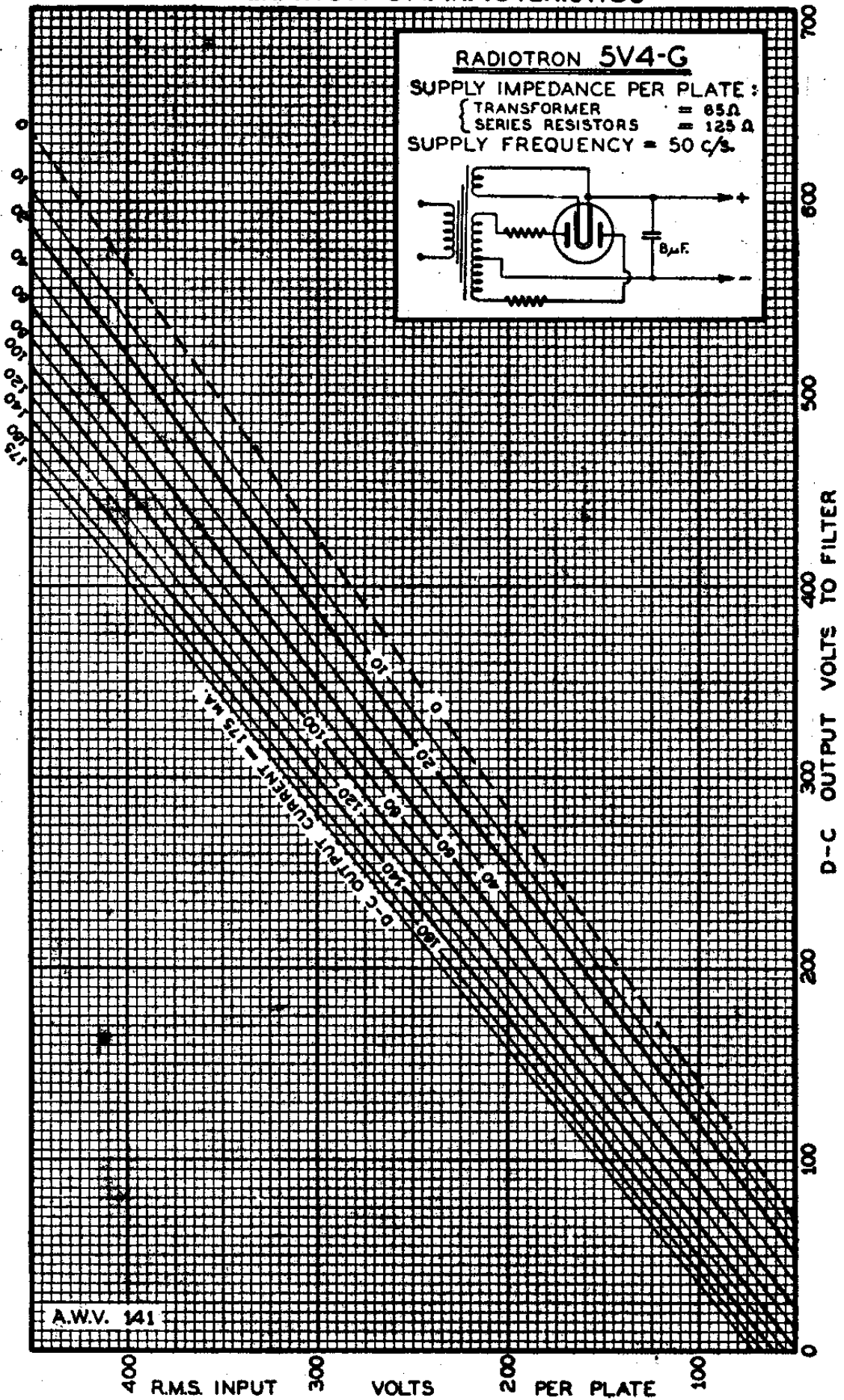


# RADIOTRON

## 5V4-G

### OPERATION CHARACTERISTICS

**5V4-G**  
SHEET 3



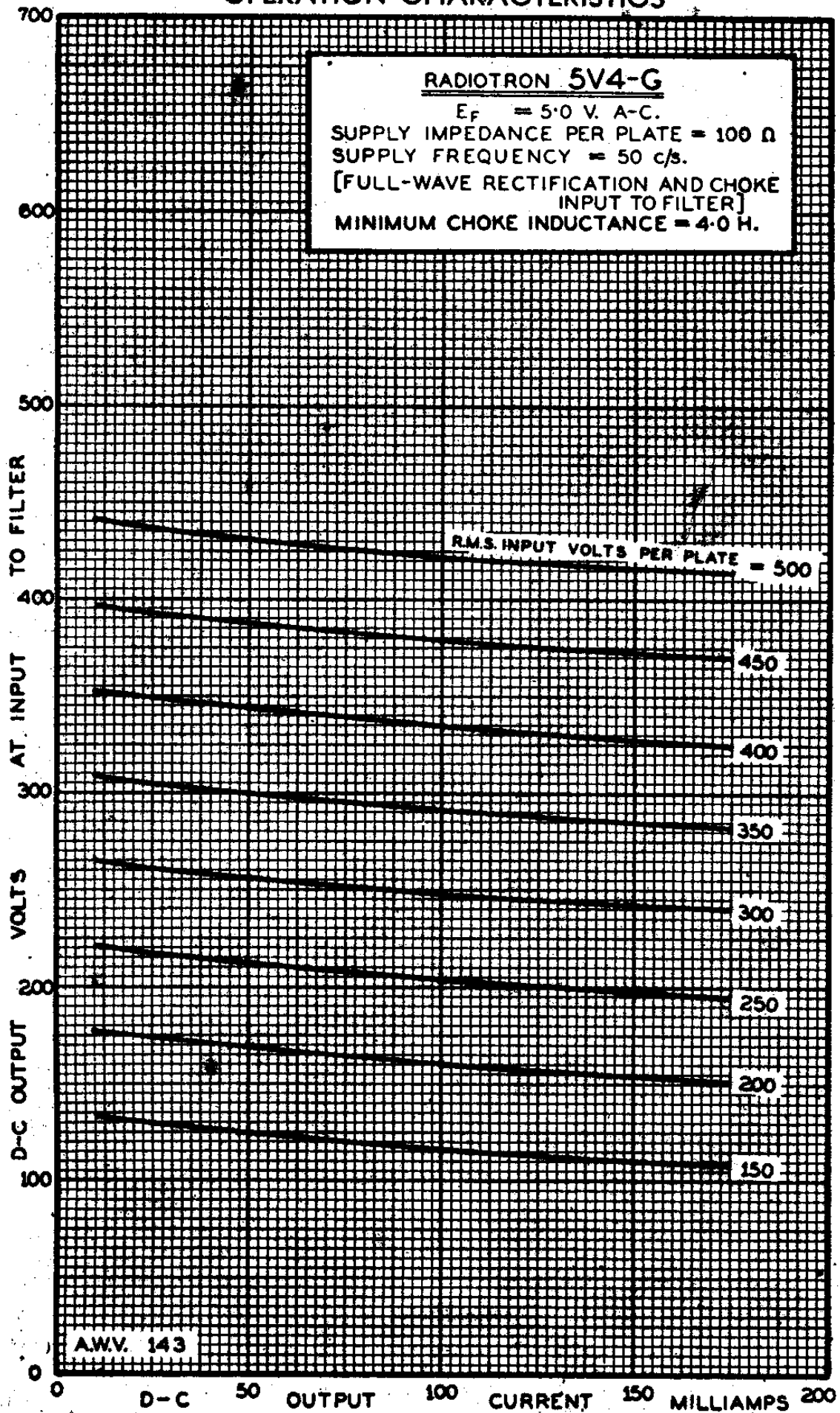


5V4-G

# RADIOTRON

## 5V4-G

### OPERATION CHARACTERISTICS

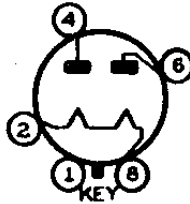


# RADIOTRON 5Y3-G

## 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.

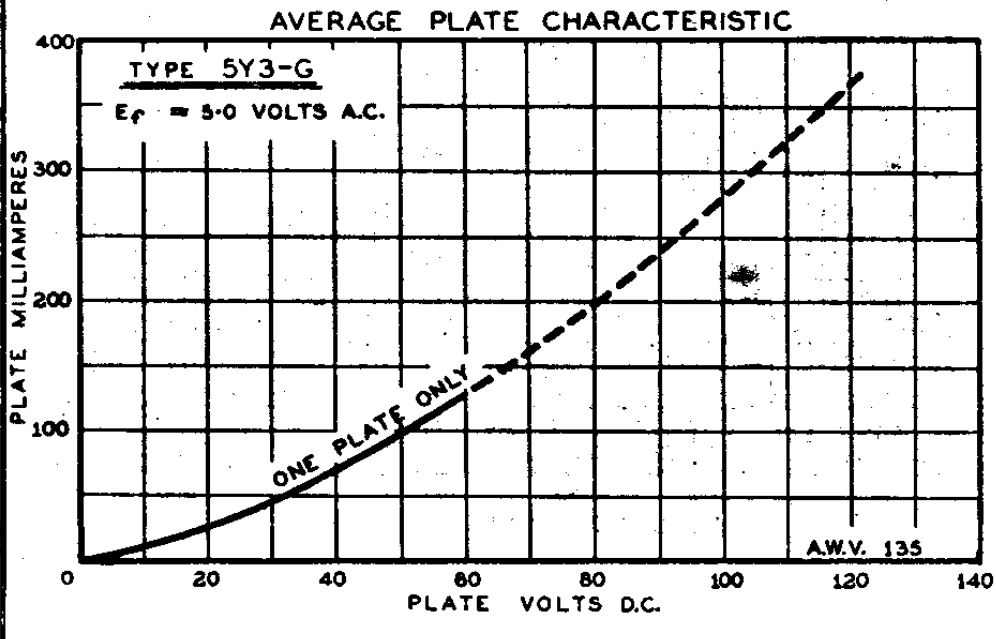
Typical Operation With Condenser-Input Filter:-

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.

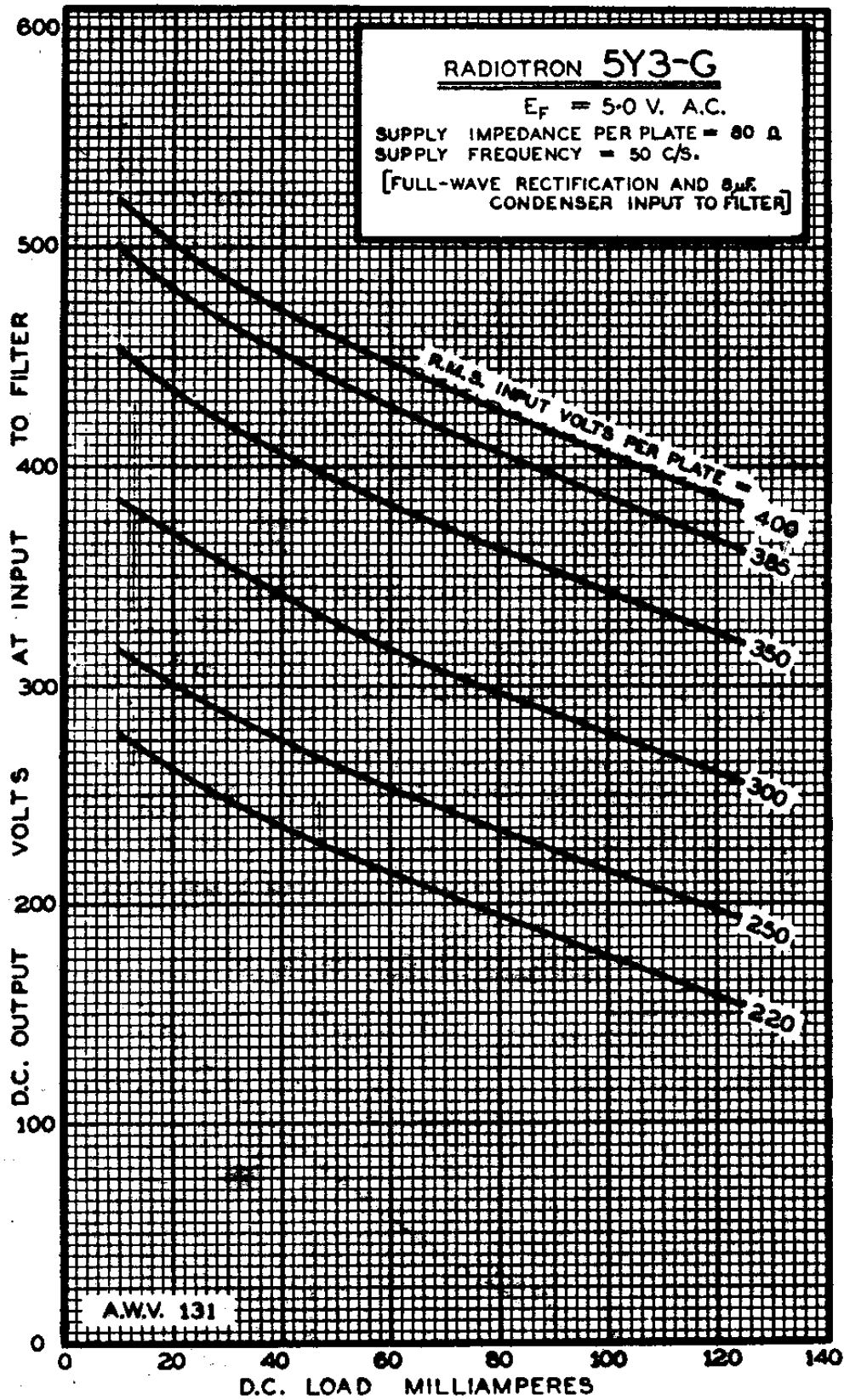


5Y3-G

# RADIOTRON

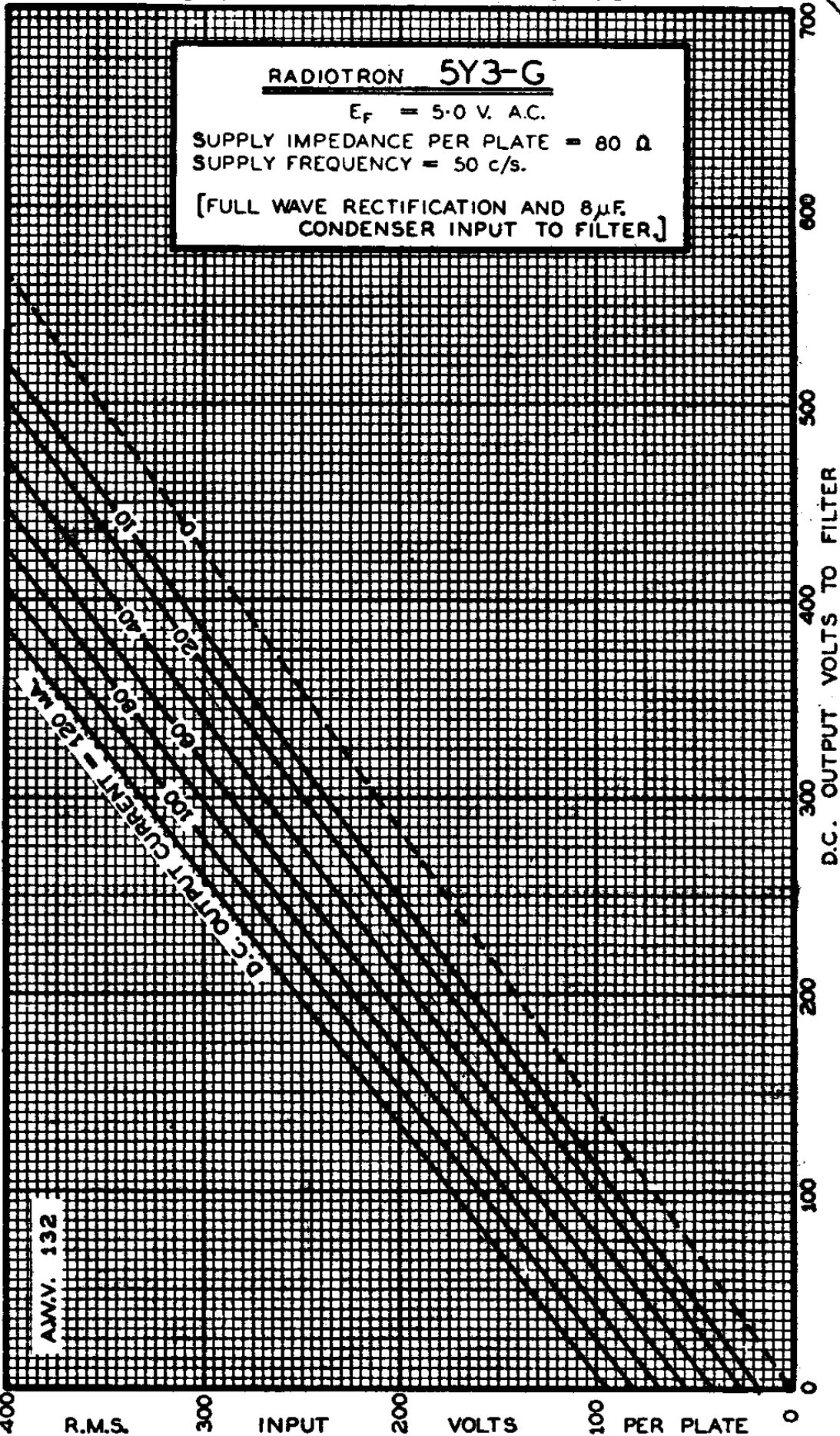
## 5Y3-G

### OPERATION CHARACTERISTICS



# RADIOTRON 5Y3-G OPERATION CHARACTERISTICS

**5Y3-G**  
SHEET 2



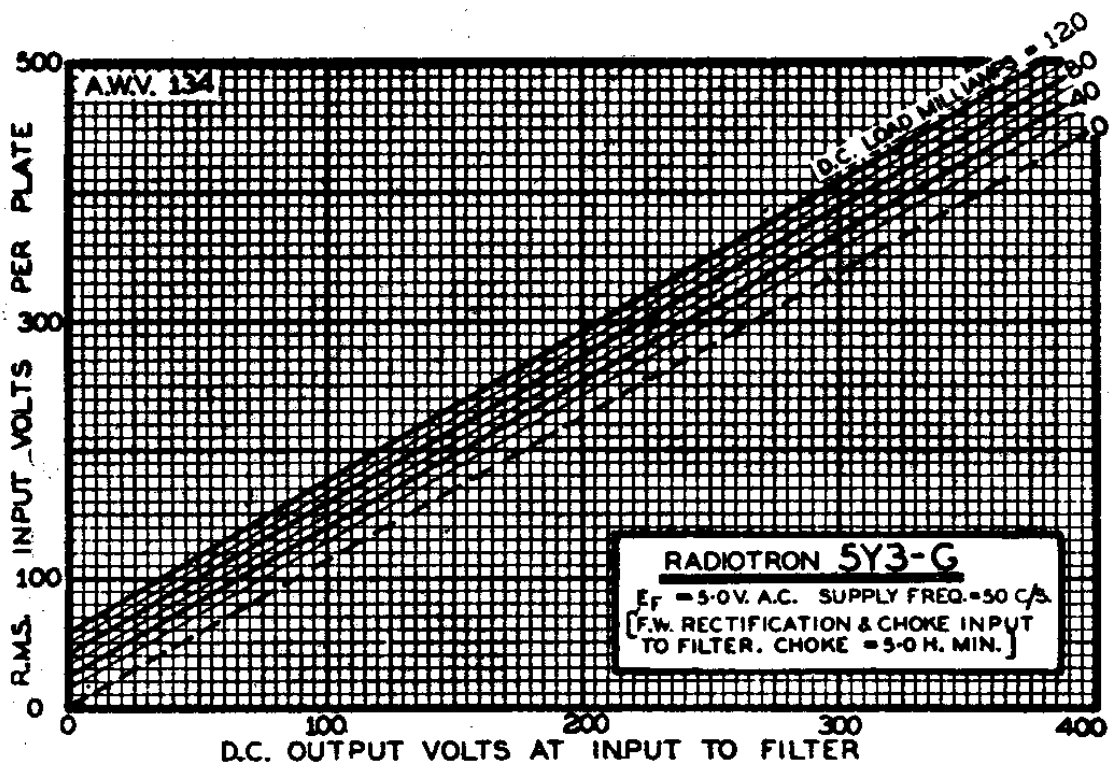
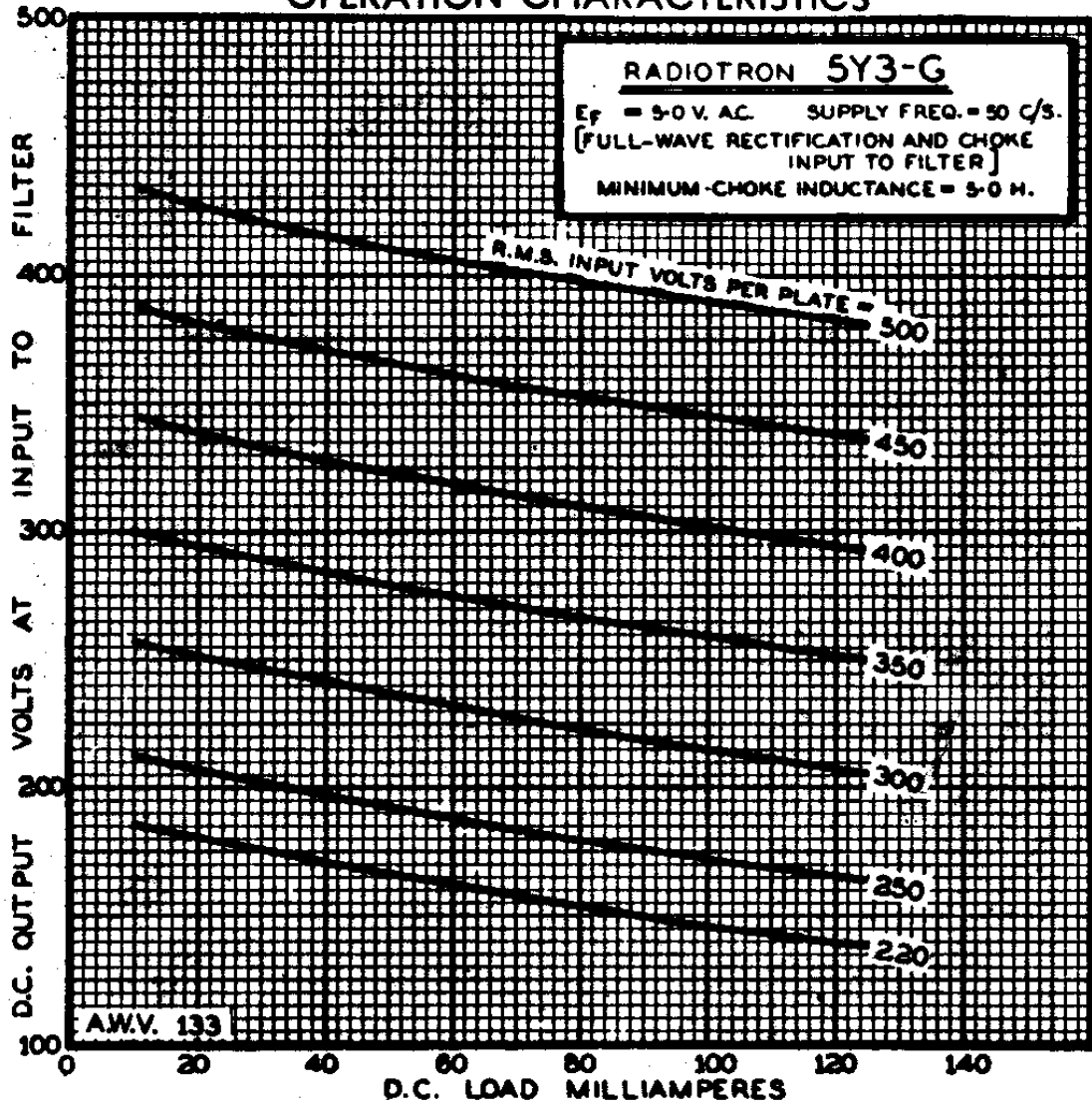
AMV. 132

5Y3-G

# RADIOTRON

## 5Y3-G

### OPERATION CHARACTERISTICS



# RADIOTRON

## 6B6-G



### 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	μμF
Grid to Cathode	2.7	μμF
Plate to Cathode	4.5	μμF

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 <sup>*</sup>	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<sup>\*\*</sup>)

Heater <sup>*</sup>	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.

<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>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

<sup>\*\*\*</sup>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.

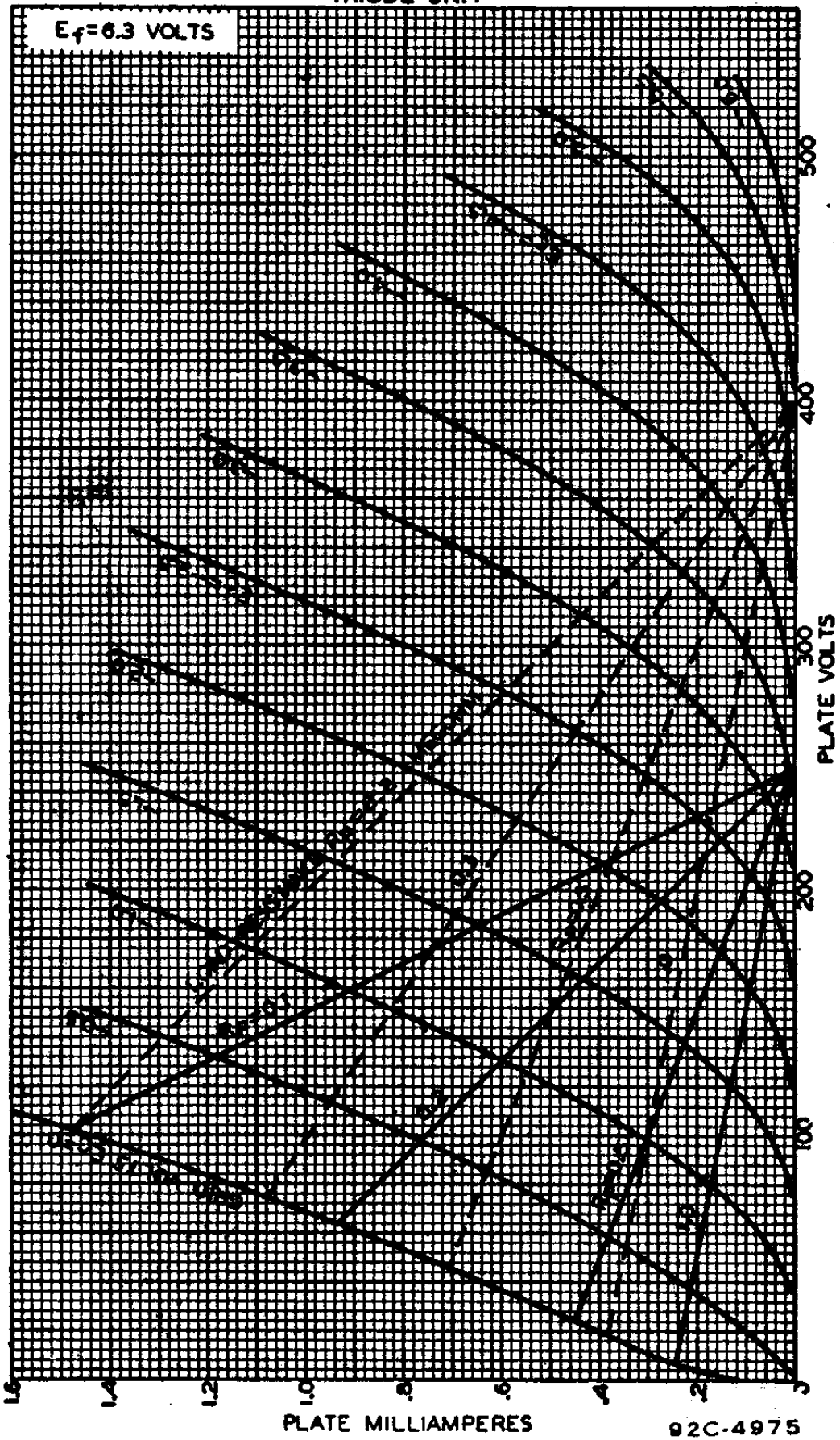
Note: The grid-circuit resistance for type 6B6-G may be as high as 10 megohms provided that the circuit constants are such that the plate current cannot exceed 1.0 mA.

# RADIOTRON

6B6-G

## AVERAGE PLATE CHARACTERISTICS TRIODE UNIT

6B6-G  
SHEET 2



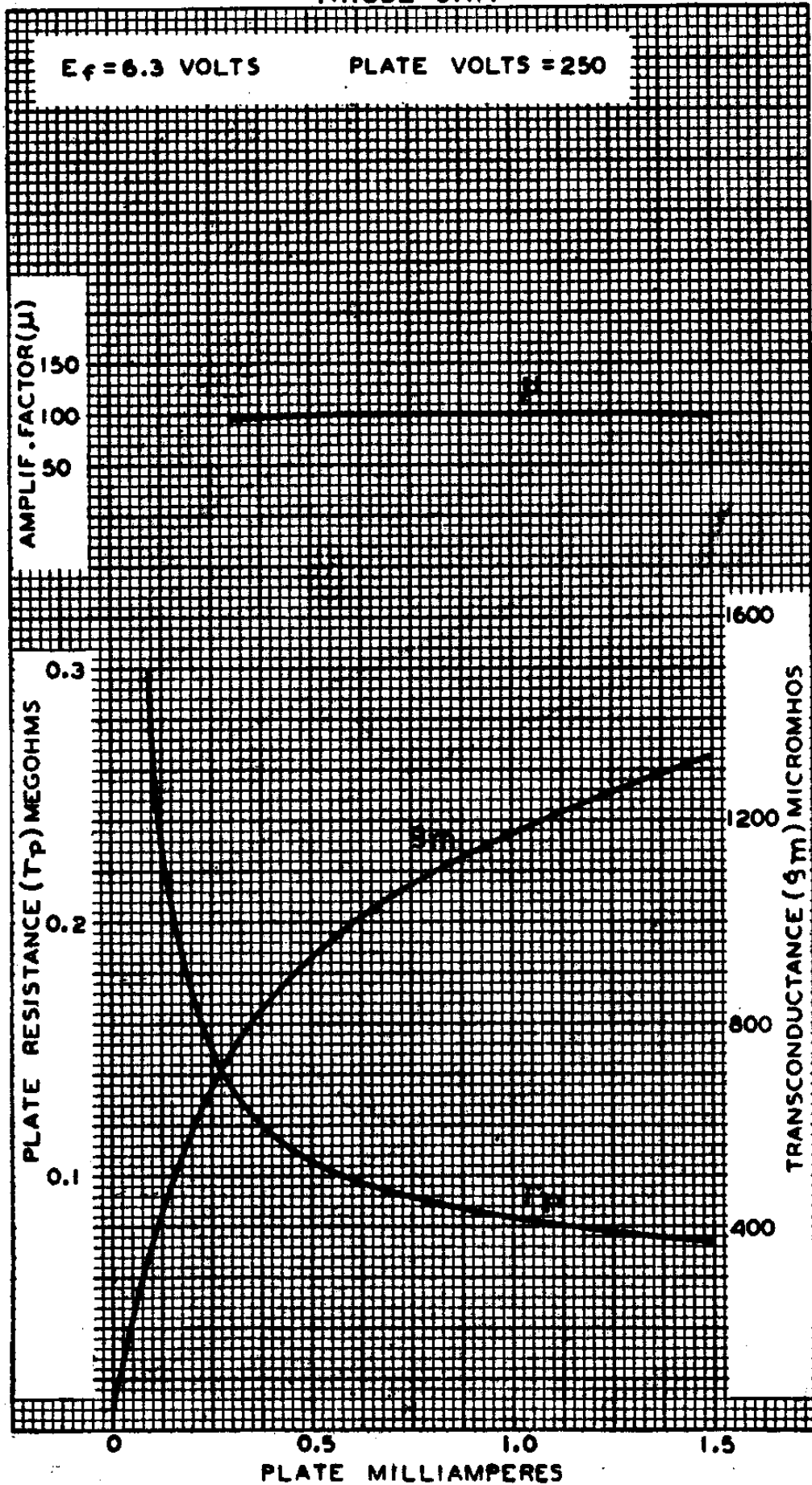


6B6-G

# RADIOTRON

6B6-G

## AVERAGE CHARACTERISTICS TRIODE UNIT



# 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	μF.	
Input	3.5	μF.	
Output	9.5	μF.	
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	μF.	
Input	3.5	μF.	
Output	9.5	μF.	
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.

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

SEPTEMBER, 1948

SYDNEY, AUSTRALIA

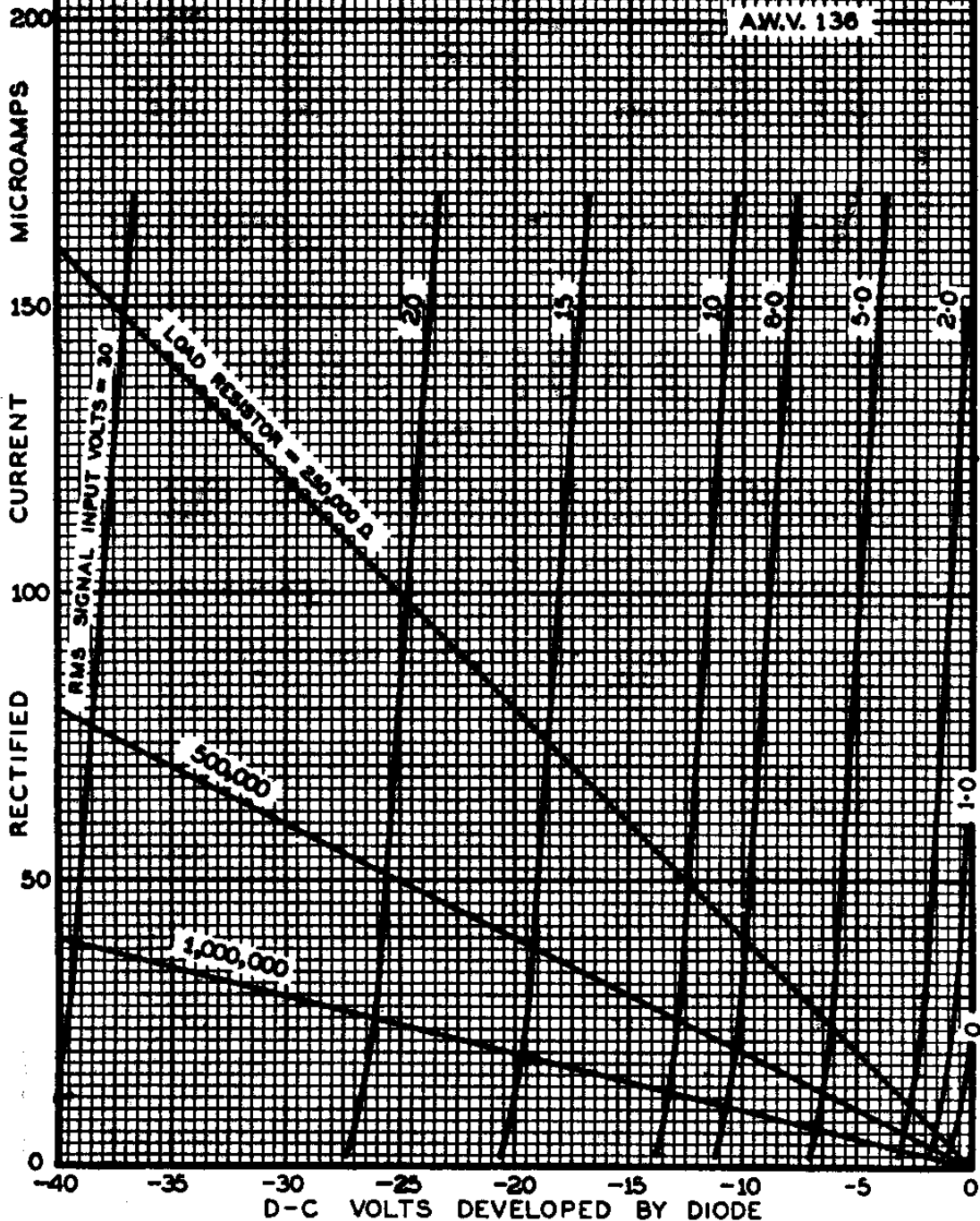
# RADIOTRON

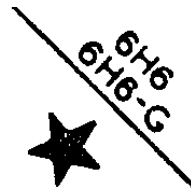
## AVERAGE DIODE CHARACTERISTICS

(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.



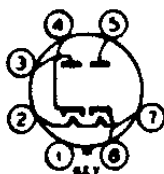


# RADIOTRON

6H6, 6H6-G

## TWIN DIODE

	Coated Unipotential Cathodes		a-c or d-c volts amp.
	6H6	6H6-G	
Heater <sup>■</sup>			
Voltage	6.3		
Current	0.3		
Direct Interelectrode Cap.			
Plate #1 to Cathode #1	3.0 <sup>0</sup>	3.1 <sup>●</sup>	μf
Plate #2 to Cathode #2	3.4 <sup>0</sup>	4.0 <sup>●</sup>	μf
Plate #1 to Plate #2	0.05 max. <sup>0</sup>	0.1 max. <sup>●</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	Any



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.

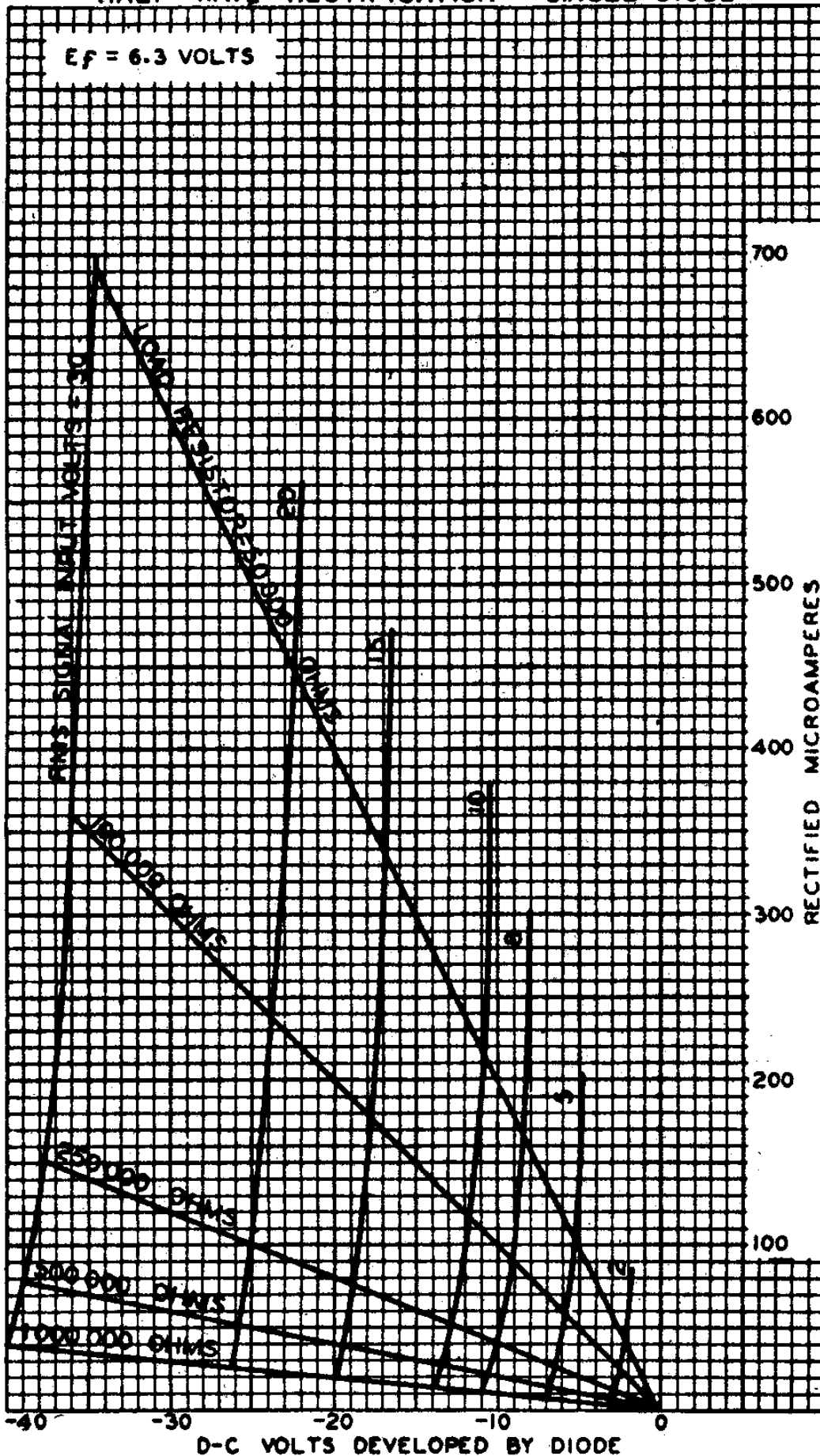
- In circuits where the cathode is not directly connected to the heater, the potential difference between heater and cathode should be kept as low as possible.
- With shell connected to cathode.
- With close-fitting shield connected to cathode.

6H6

# RADIOTRON

6H6

AVERAGE CHARACTERISTICS  
HALF-WAVE RECTIFICATION - SINGLE DIODE



# 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.	$\mu\text{f}$
Heptode Grid No.1 to Triode Grid & Heptode Grid No.3	0.13	$\mu\text{f}$
Heptode Grid No.1 to Triode Plate	0.015	$\mu\text{f}$
Triode Grid & Heptode Grid No.3 to Triode Plate	2.2	$\mu\text{f}$
R.F. Input (Heptode Grid No.1 to All Other Electrodes)	4.4	$\mu\text{f}$
Osc. Output (Triode Plate to All Other Electrodes)	5.5	$\mu\text{f}$
Osc. Input (Triode Grid & Heptode Grid No.3 to All Other Electrodes)	11.7	$\mu\text{f}$
Mixer Output (Heptode Plate to All Other Electrodes)	8.8	$\mu\text{f}$
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	6.3 volts
Heptode Plate Voltage	100	250 volts
Heptode Screen Voltage	100	100 volts
Heptode Control-Grid Voltage	-3	-3 volts
Triode Plate Voltage	100	250 <sup>o</sup> volts
Triode Grid Resistor	50000	50000 ohms
Heptode Plate Resistance	0.9	4.0 megohms
Conversion Transconductance	250	290 $\mu\text{mhos}$
Heptode Control Grid Bias for Conver. Transcond.=2 $\mu\text{mhos}$	-20	-20 volts
Heptode Plate Current	1.4	1.3 ma.
Heptode Screen Current	3.0	2.9 ma.
Triode Plate Current	3.0	5.0 ma.
Triode Grid & Heptode Grid No.3 Current	0.3	0.4 ma.
<u>TRIODE SECTION</u>		
Plate Voltage	100	volts
Grid Voltage	0	volts
Amplification Factor	17	
Plate Resistance	10600	ohms
Transconductance	1600	$\mu\text{mhos}$
Plate Current	7	ma.
<sup>o</sup> Applied through a 20000 ohm dropping resistor.		

6J8-G

# RADIOTRON

## 6J8-G

### OPERATION CHARACTERISTICS

A.W.V. 130

#### RADIOTRON 6J8-G

$E_F = 6.3 \text{ V.}$

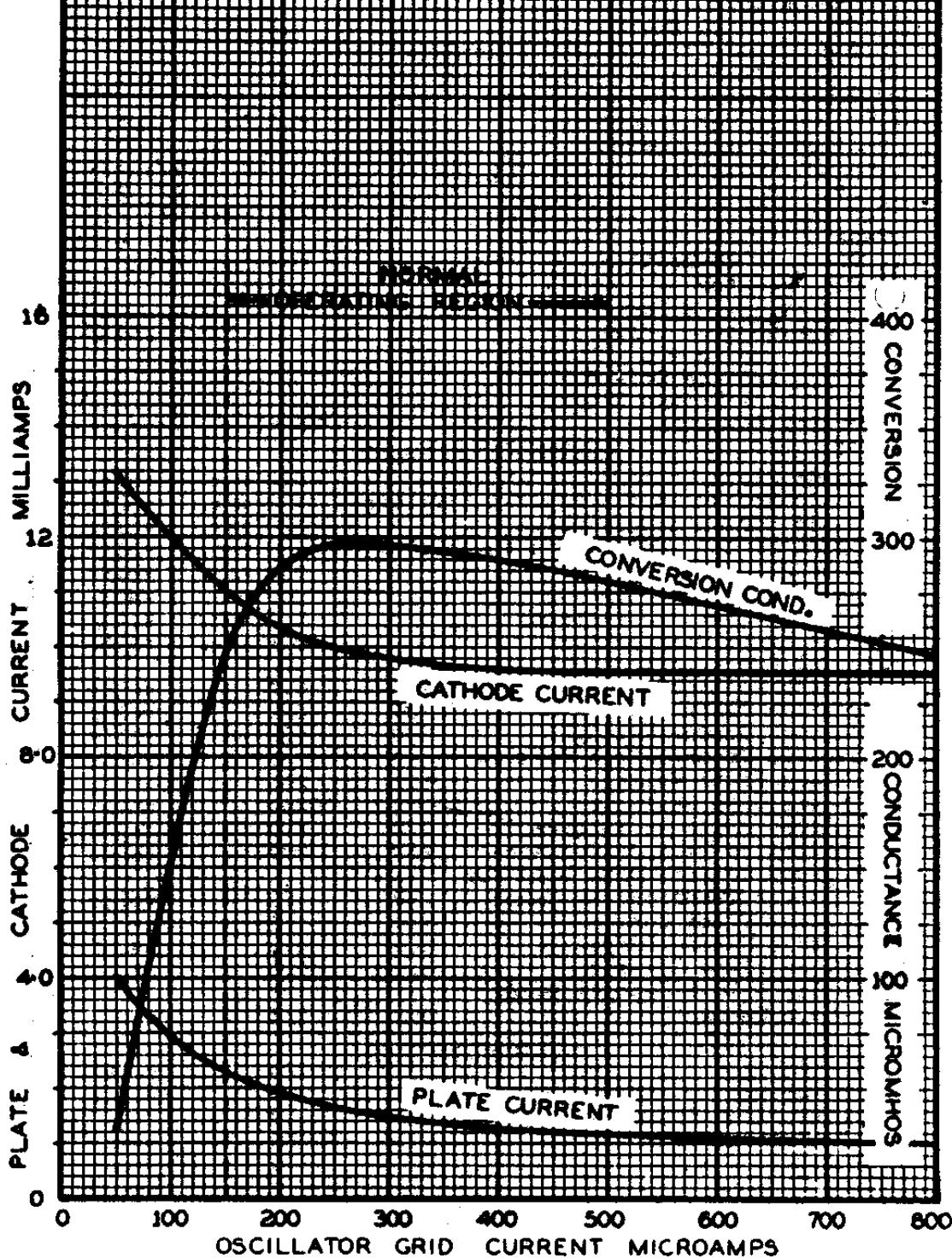
$E_P = 250 \text{ V.}$

$E_{G1} = -3 \text{ V.}$

$E_{G2,4} = 100 \text{ V.}$

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

OSCILLATOR GRID RESISTOR = 50,000  $\Omega$



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

SEPTEMBER, 1940

SYDNEY, AUSTRALIA



# RADIOTRON

## 6K7-GT

### 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.	μF
Input <sup>•</sup>	4.6	μF
Output <sup>•</sup>	12	μF
Cathode to Plate <sup>◦</sup>	5.5	μF
Cathode to All Other Electrodes <sup>◦</sup>	9.0	μF

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

KEY

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 transconductance 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.

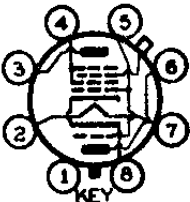


# RADIOTRON

## 6K8-G

### TRIODE-HEXODE CONVERTER



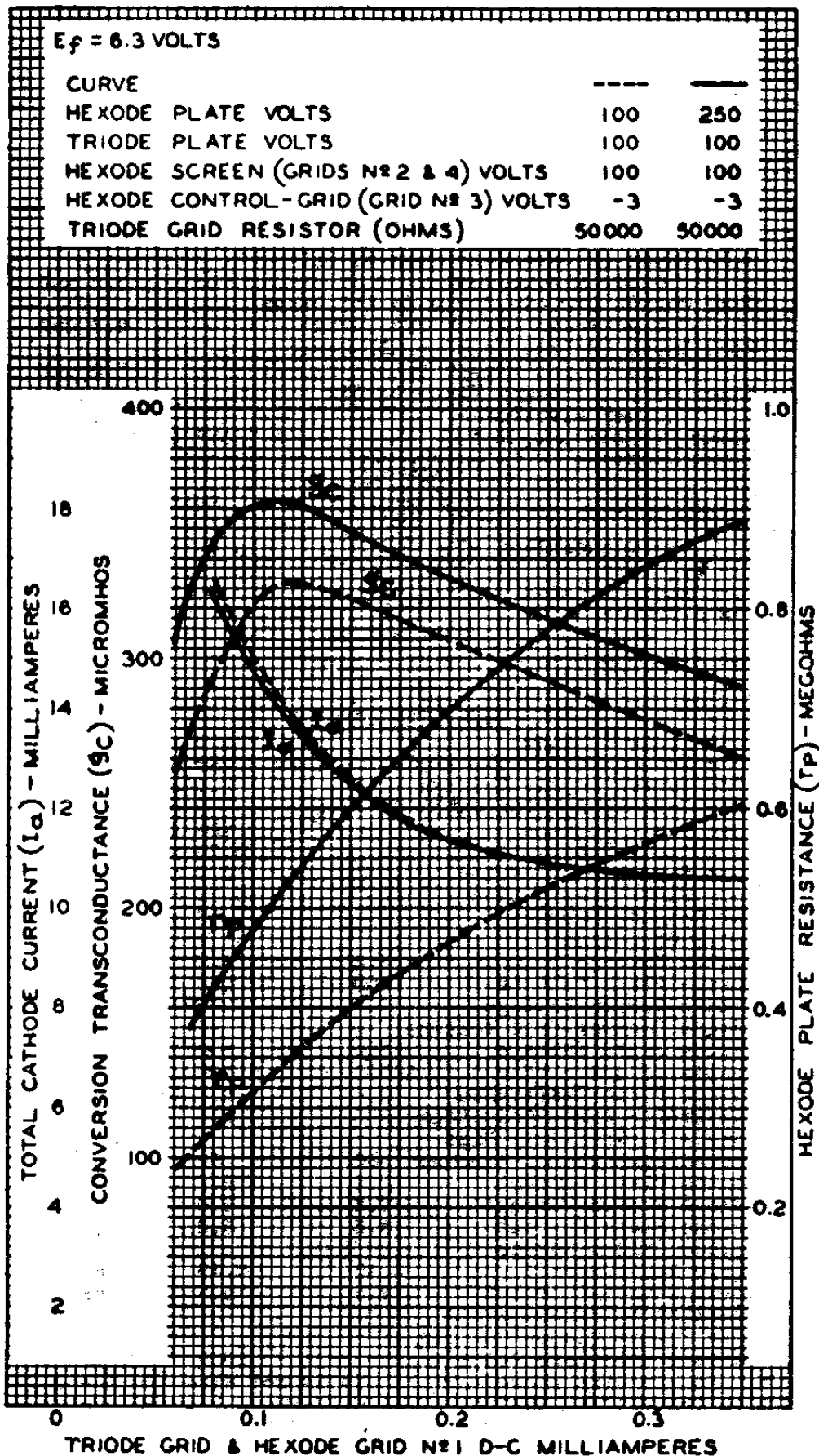
Heater	Coated Unipotential Cathode		
Voltage	6.3	a-c or d-c volts	
Current	0.3	amp.	
Direct Interelectrode Capacitances (With Standard Shield):			
Hexode Grid No.3 to Hexode Plate			0.04 $\mu$ f
Hexode Grid No.3 to Triode Grid & Hexode Grid No.1			0.1 $\mu$ f
Triode Grid & Hexode Grid No.1 to Triode Plate			2.0 $\mu$ f
R.F. Input (Hexode Grid No.3 to All Other Electrodes)			5.5 $\mu$ f
Osc. Output (Triode Plate to All Other Electrodes except Osc. Grid)			4.0 $\mu$ f
Osc. Input (Triode Grid to All Other Electrodes except Triode Plate)			7.0 $\mu$ f
Mixer Output (Hexode Plate to All Other Electrodes)			5.5 $\mu$ f
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 & De-
Pin 4-Hexode Grids #2 & #4			flector Plates
Pin 5-Hexode Grid #1 & Triode Grid			Cap -Hexode Grid #3
			
BOTTOM VIEW			
<b>Mounting Position</b>			
<u>CONVERTER SERVICE</u>			
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.	
<b>Typical Operation:</b>			
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 Transconductance 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.			

6K8-G

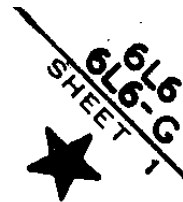
# RADIOTRON

## 6K8-G

### OPERATION CHARACTERISTICS



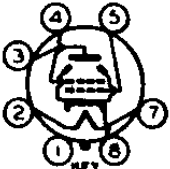
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# RADIOTRON

## 6L6, 6L6-G

### BEAM POWER AMPLIFIER

Heater	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 Water Octal 7-Pin	Medium Shell Octal 7-Pin
Basing Designation	7AC	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
		Any

BOTTOM VIEW

#### SINGLE-VALVE 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:	

	Fixed Bias		Cathode Bias		
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>\* (Triode Connection)†

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

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

\* 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.

† Screen tied to plate.

\*, \* : See next page.

← Indicates a change.

# RADIOTRON

## 6L6, 6L6-G

6L6  
6L6-G  
SHEET 2

### BEAM POWER AMPLIFIER

(continued from preceding page)

	Fixed Bias		Cathode Bias	
Peak A-F Grid-to-Grid Voltage	45	45	57	volts
Zero-Sig. Plate Cur.	88	88	88	ma.
Max.-Sig. Plate Cur.	132	140	100	ma.
Zero-Sig. Screen Cur.	5	5	5	ma.
Max.-Sig. Screen Cur.	15	11	17	ma.
Effective Load Resistance (plate to plate)	6600	3800	9000	ohms
Total Harmonic Dist.	2	2	4	%
Max.-Sig. Power Output	26.5	18	24.5	watts

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

Values are for 2 valves.

	Fixed Bias		
Plate	360	360	volts
Screen	225	270	volts
Grid	-18	-22.5	volts
Peak A-F Grid-to-Grid Volt.	52	72	volts
Zero-Sig. Plate Cur.	78	88	ma.
Max.-Sig. Plate Cur.	142	205	ma.
Zero-Sig. Screen Cur.	3.5	5	ma.
Max.-Sig. Screen Cur.	11	16	ma.
Effective Load Resistance (plate to plate)	6000	3800	ohms
Peak Grid-Input Power <sup>#</sup>	140	270	mw.
Total Harmonic Distortion <sup>**</sup>	2	2	%
Max.-Sig. Power Output	31	47	watts

- Subscript 2 indicates that grid current flows during some part of input cycle.
- # Driver stage should be capable of supplying the grids of the class AB<sub>2</sub> stage with the specified peak values at low distortion. The effective resistance per grid circuit of the class AB<sub>2</sub> stage should be kept below 500 ohms and the effective impedance at the highest desired response frequency should not exceed 700 ohms.
- \* 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 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. Fixed-bias values up to 10% of each typical screen voltage can be used without increasing distortion, when the push-pull connection is used.
- \*\* With zero-impedance driver and perfect regulation, plate-circuit distortion does not exceed 2%. In practice, plate-voltage regulation, screen-voltage regulation, and grid-bias regulation should be not greater than 5%, 5%, and 3%, respectively.

6L6

# RADIOTRON

6L6

AVERAGE PLATE CHARACTERISTICS  
TRIODE CONNECTION

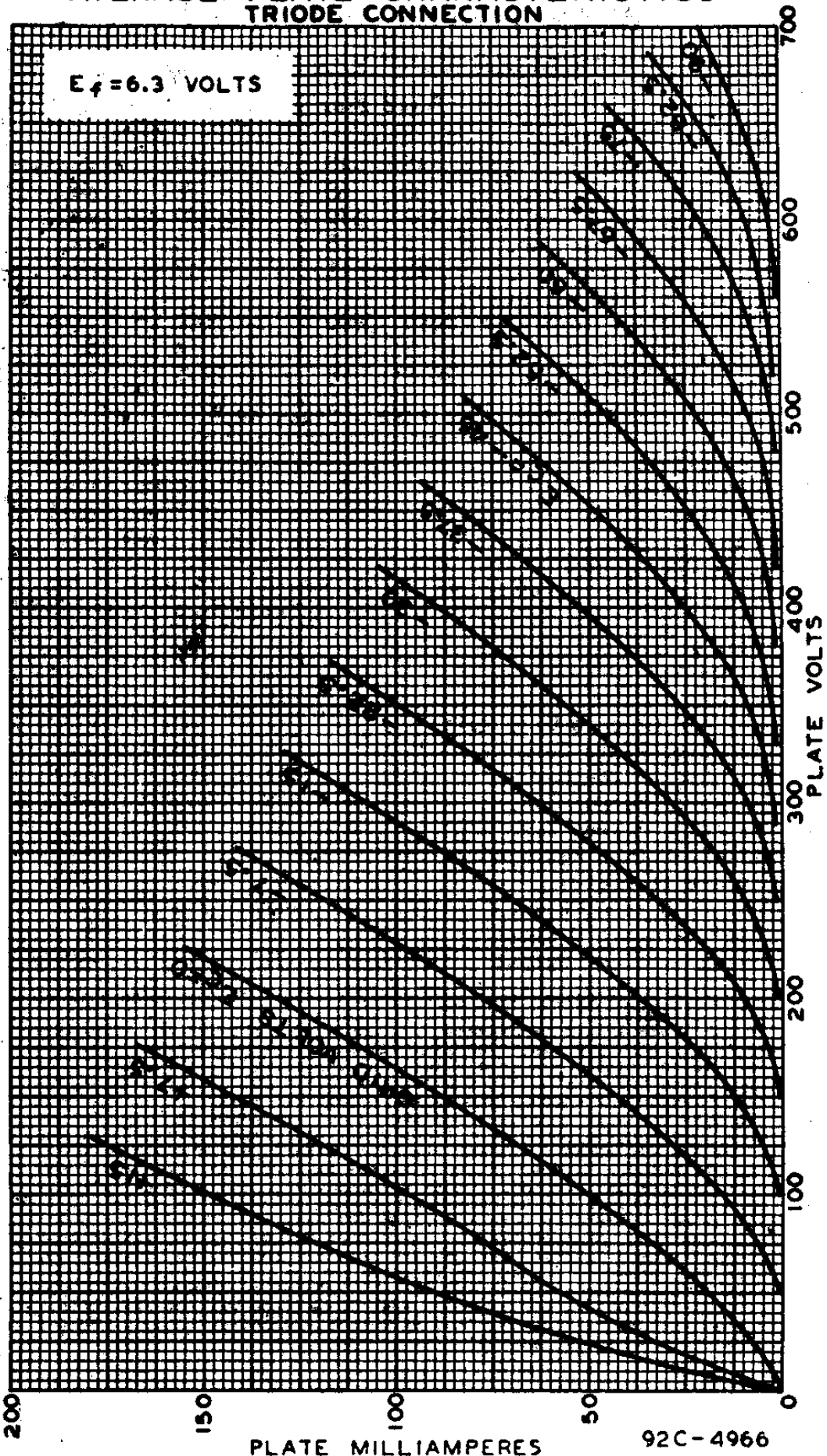


PLATE MILLIAMPERES

92C-4966

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

# RADIOTRON

## 6U7-G



### TRIPLE - GRID SUPER - CONTROL AMPLIFIER

Heater  $\star$  Coated Unipotential Cathode  $\#$   
 Voltage 6.3 a-c or d-c volts  
 Current 0.3 amp.

Direct Interelectrode Capacitances:  $\bullet$

Grid to Plate 0.007 max.  $\mu\mu\text{F}$   
 Input 5  $\mu\mu\text{F}$   
 Output 9  $\mu\mu\text{F}$

Maximum Overall Length 4-29/32"

Maximum Diameter 1-9/16"

Bulb ST-12

Cap Skirted Miniature

Mounting Position Any

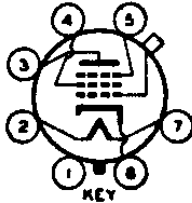
Base Small Shell Octal 7-Pin

Pin 1-No Connection

Pin 2-Heater

Pin 3-Plate

Pin 4-Screen



KEY

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 <sup><math>\Delta</math></sup>	-3	-3	volts
Suppressor	Connected to cathode at socket		
Plate Res. (approx.)	0.25	0.8	megohm
Transconductance	1500	1600	$\mu\text{mhos}$
Grid Bias for transcon- ductance of 2 $\mu\text{mhos}$	-50	-50	volts
Plate Current	8.0	8.2	mA.
Screen Current	2.2	2.0	mA.

$\star$  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.

$\bullet$  With close-fitting shield-can connected to cathode.

$\Delta$  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.

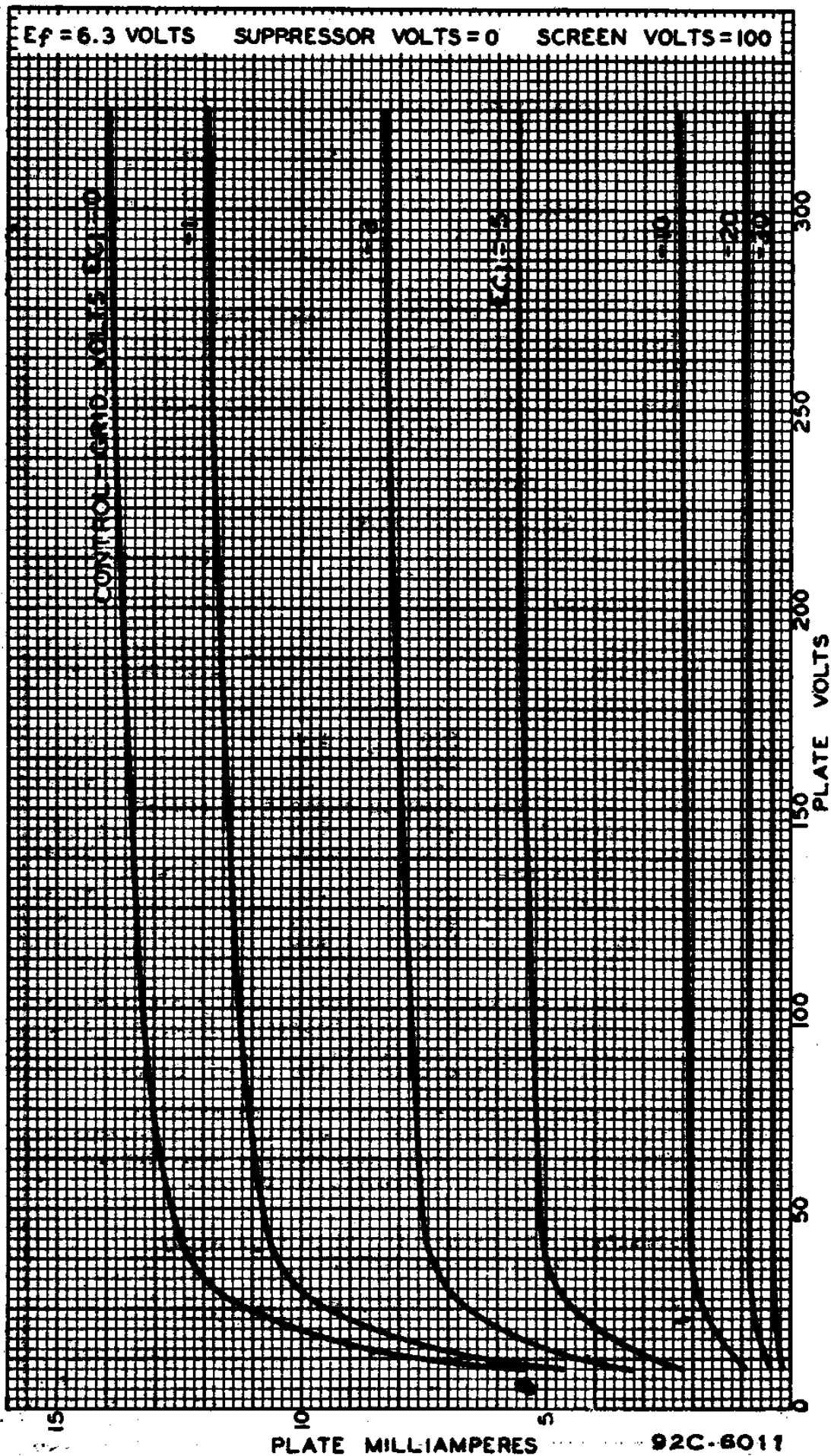
Characteristic curves for this type apply  
 also to type 6K7-GT

6U7-G

# RADIOTRON

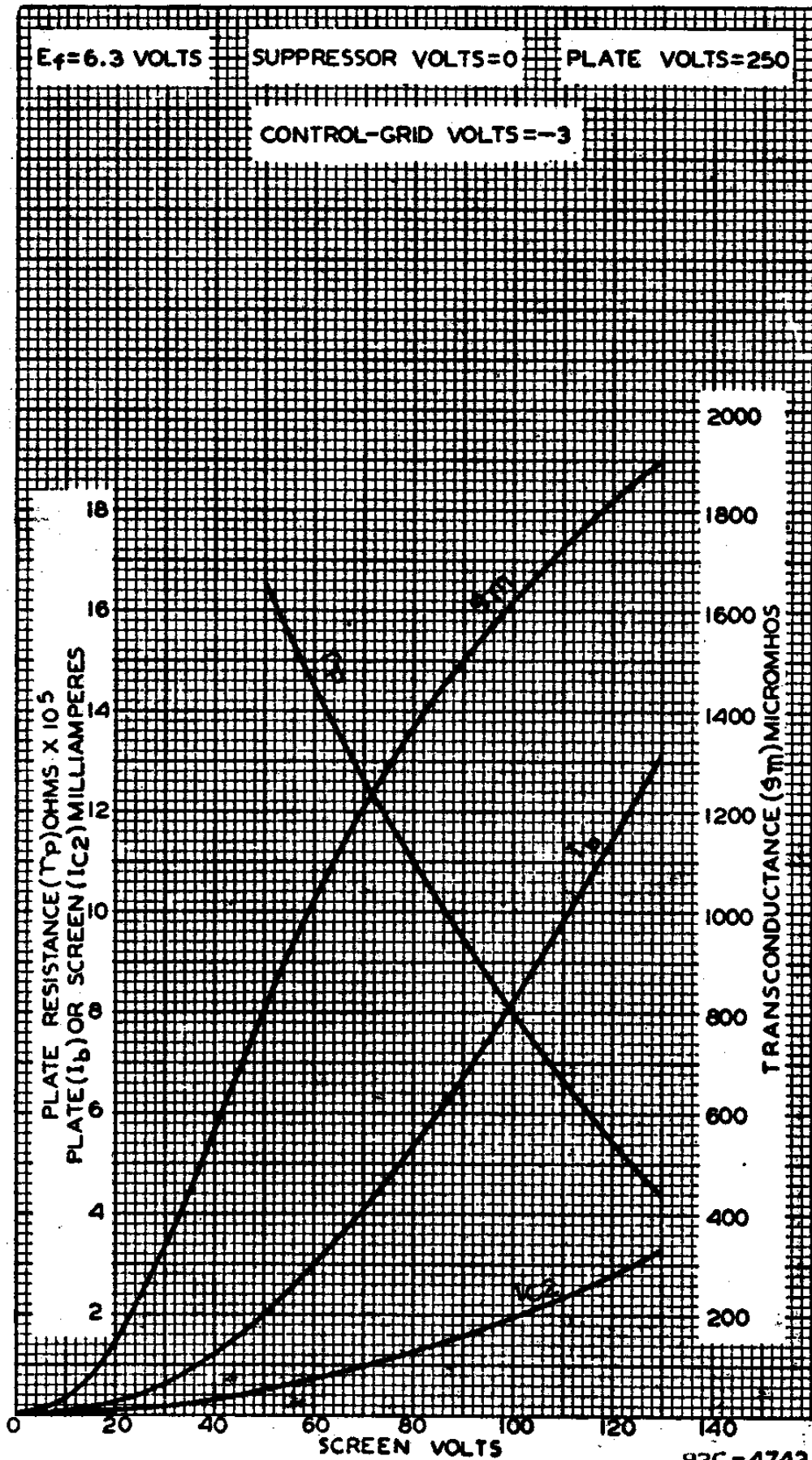
6U7-G

## AVERAGE PLATE CHARACTERISTICS



# RADIOTRON

## 6U7-G AVERAGE CHARACTERISTICS



92C-4743

AMALGAMATED WIRELESS VALVE Co. PTY. LTD.

JULY, 1941

SYDNEY, AUSTRALIA

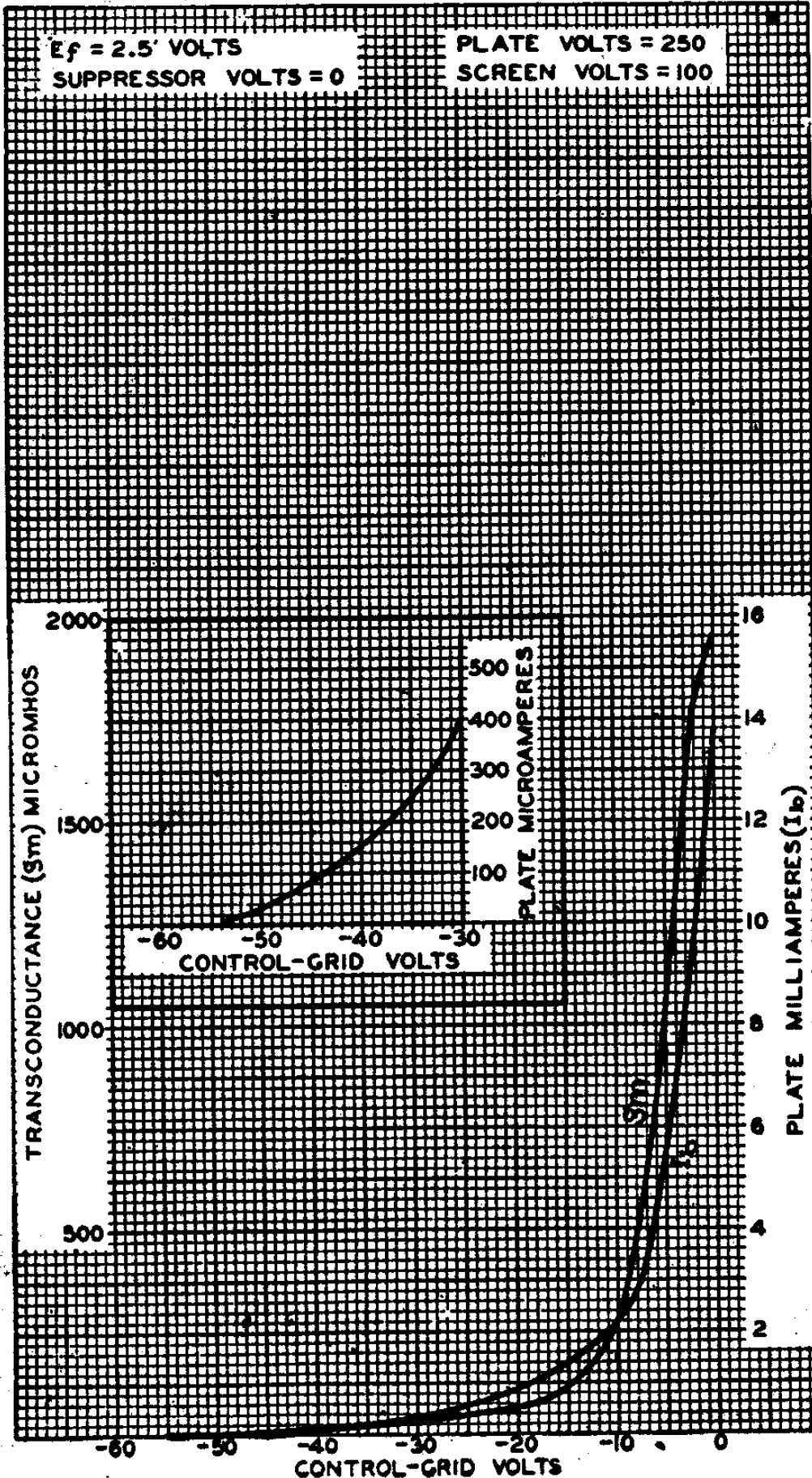


6U7-G

# RADIOTRON

6U7-G

## AVERAGE CHARACTERISTICS

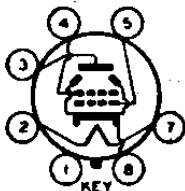


# RADIOTRON

## 6V6-G

### BEAM POWER AMPLIFIER

Heater	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 <sup>●●</sup>	volts
Grid Voltage <sup>Δ</sup>	-15	-19	-15.6 <sup>●●</sup>	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.

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<sup>o</sup>)

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

	<u>Class A<sub>1</sub></u>	<u>Class AB<sub>1</sub></u>	
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.

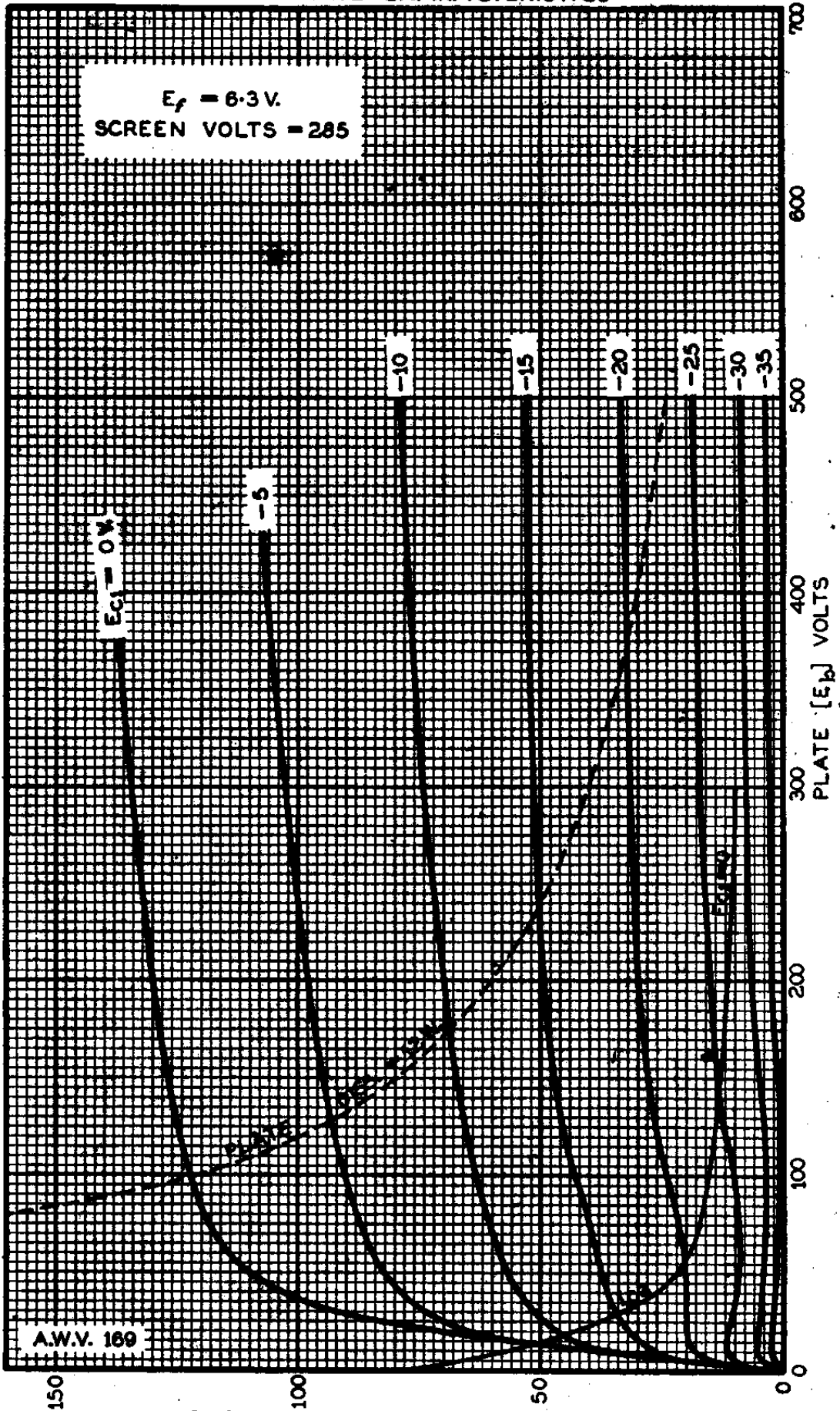
←Indicates a change.

# RADIOTRON

6V6-G

## AVERAGE PLATE CHARACTERISTICS

6V6-G  
SHEET 2

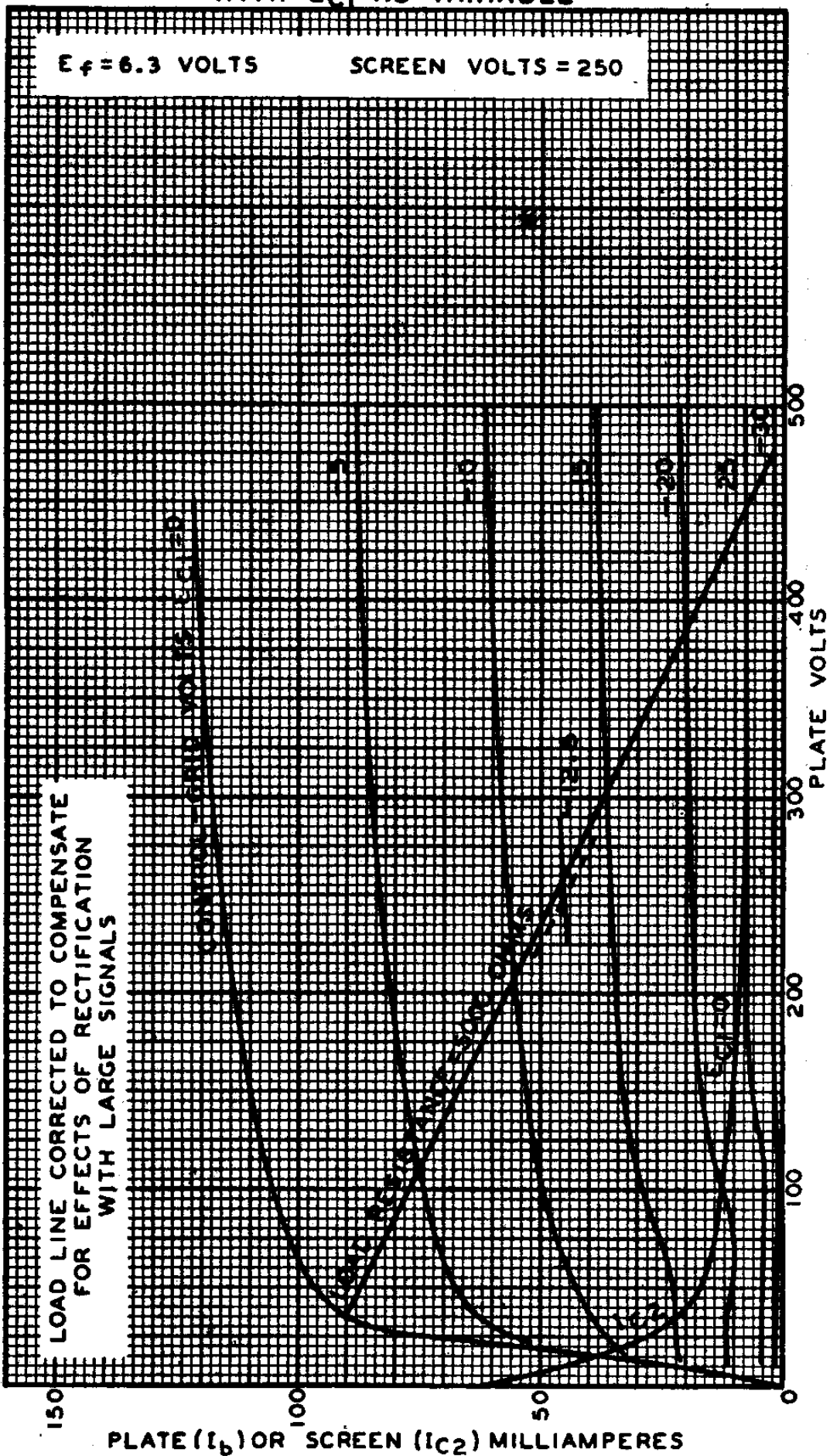


6V6-G

# RADIOTRON

6V6-G

## AVERAGE PLATE CHARACTERISTICS WITH $E_{c1}$ AS VARIABLE

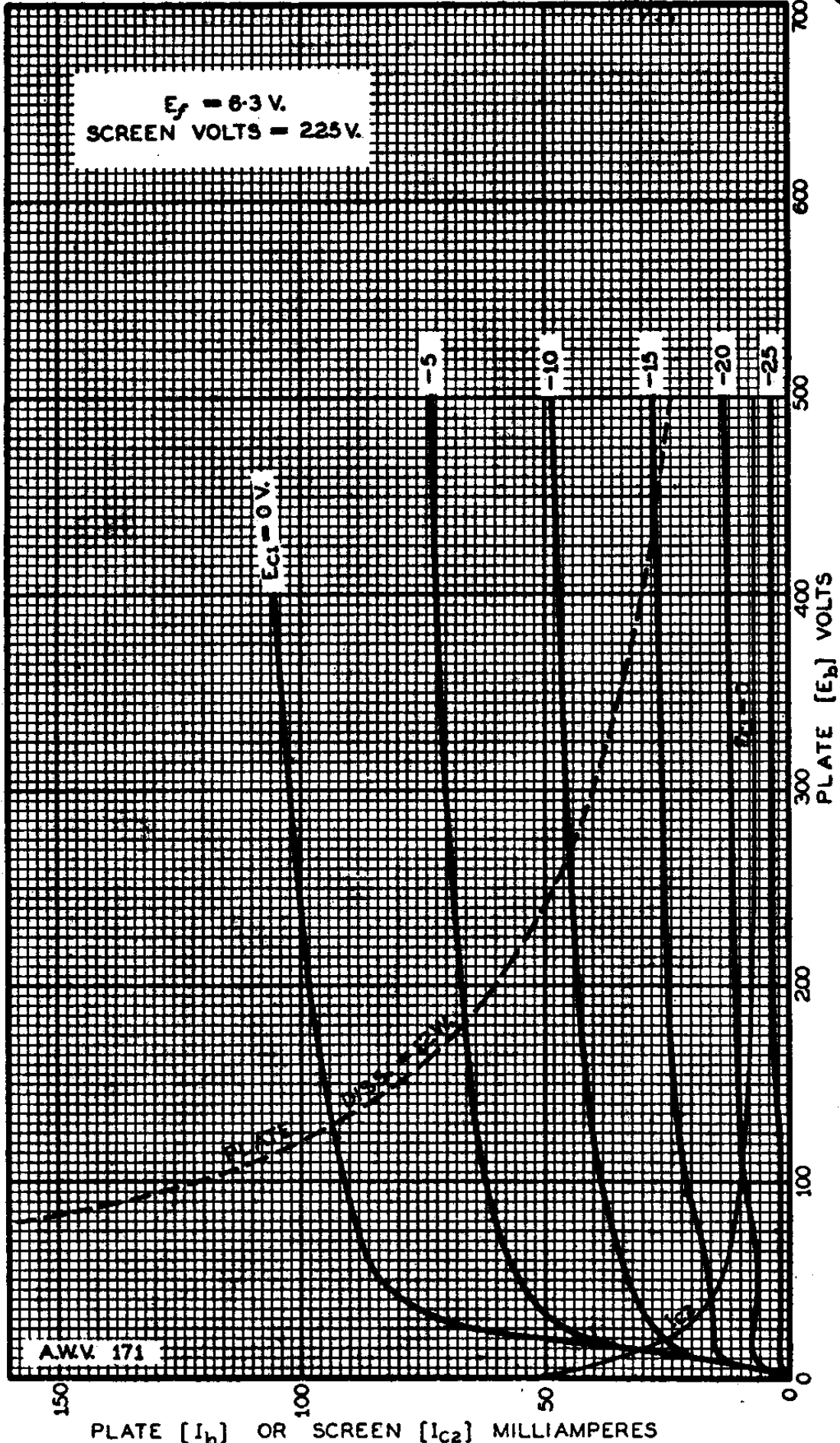


# RADIOTRON

6V6-G

## AVERAGE PLATE CHARACTERISTICS

6V6-G  
SHEET 3



AWV 171

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

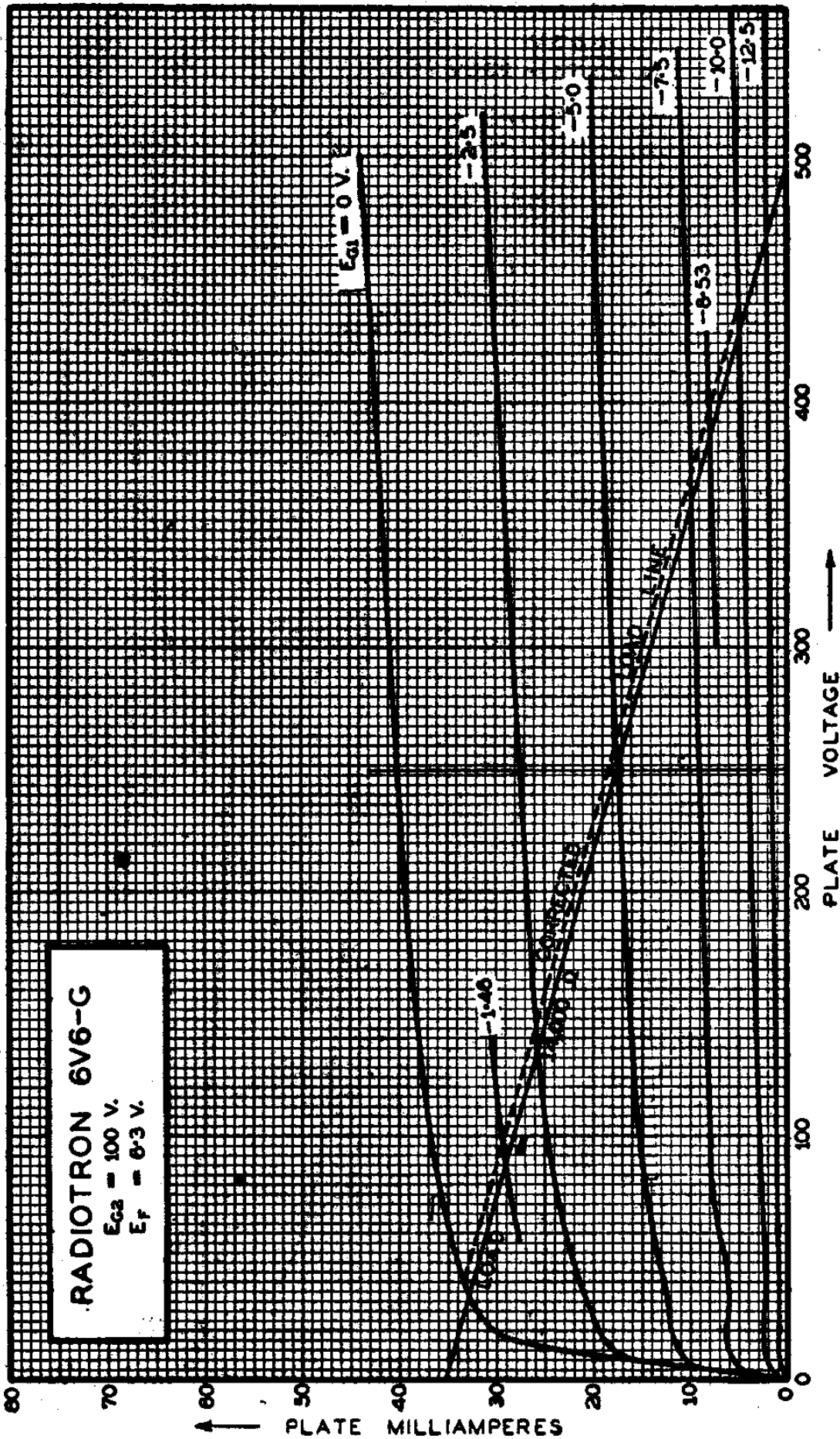
6V6-G

# RADIOTRON

6V6-G

## AVERAGE PLATE CHARACTERISTICS

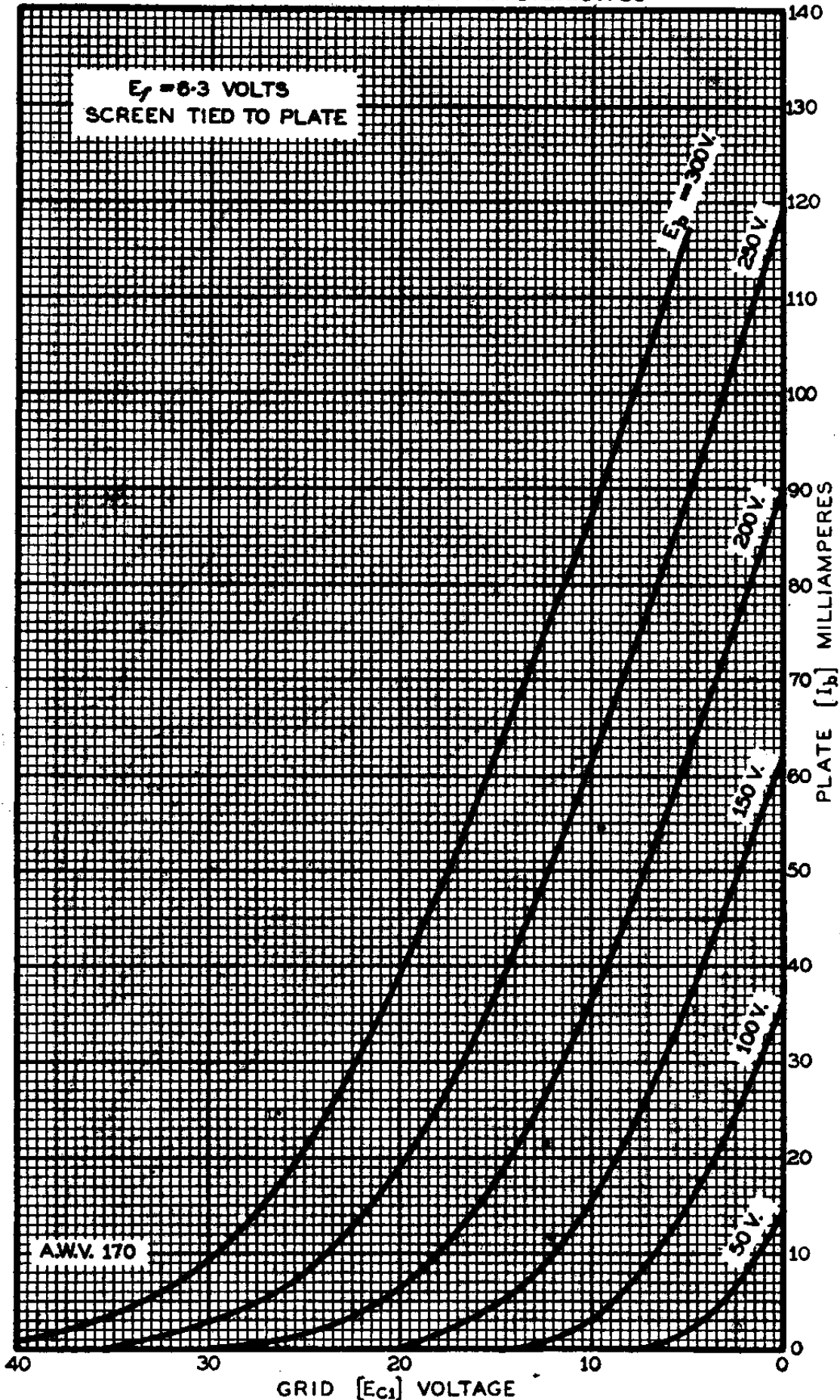
with  $E_{c1}$  as variable



# RADIOTRON

6V6-G

## TRIODE MUTUAL CHARACTERISTICS



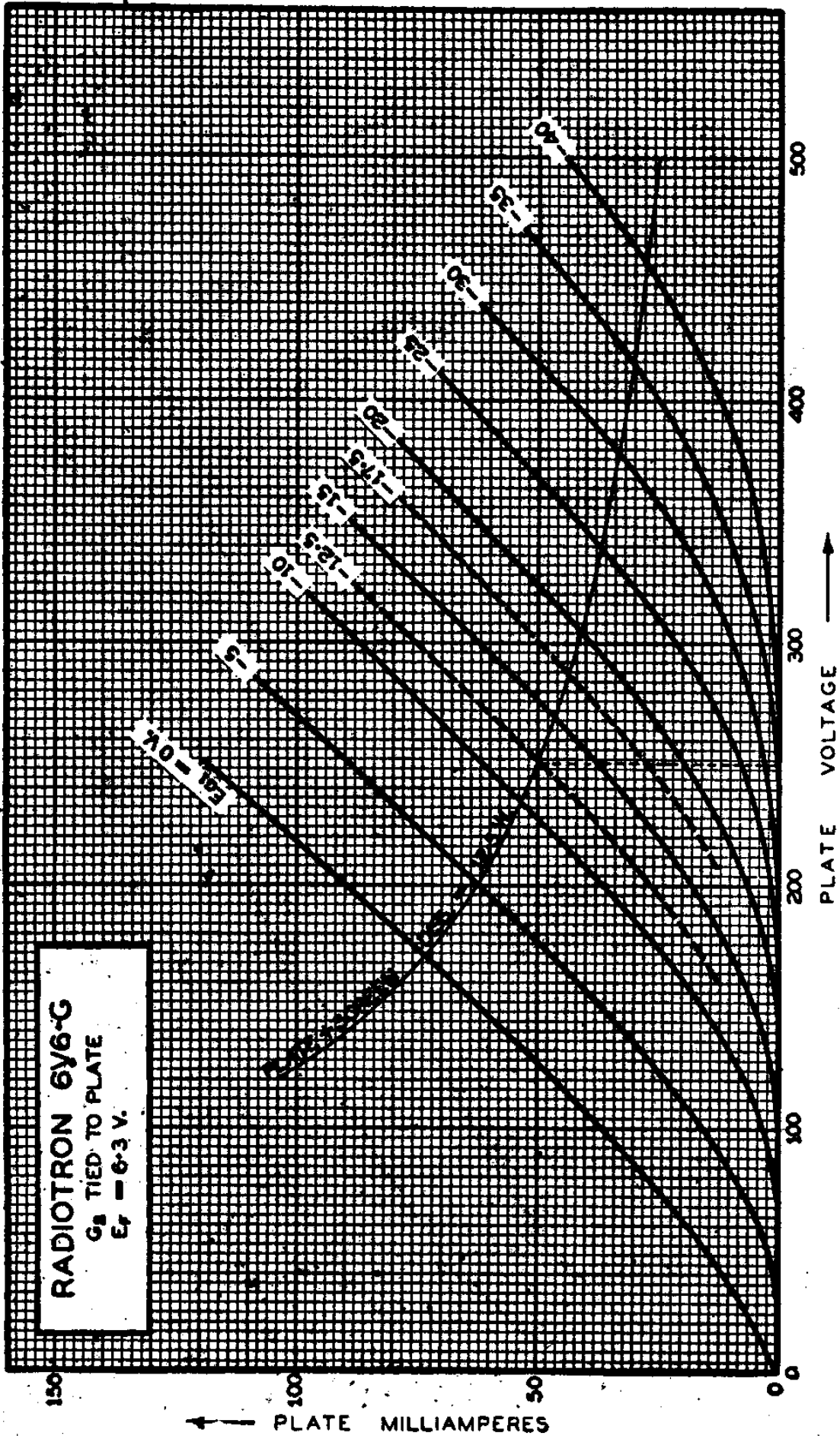


6V6-G

# RADIOTRON

6V6-G

## AVERAGE PLATE CHARACTERISTICS TRIODE CONNECTION



# RADIOTRON

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



## FULL-WAVE HIGH-VACUUM RECTIFIER

Heater Voltage Current	Coated Unipotential Cathode		
	6X5	6X5-G	6X5-GT
	6.3 0.6		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

**BOTTOM VIEW**

**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
<b>With Condenser-Input Filter:</b>	
A-C Plate Voltage per Plate (RMS)	325 max. volts
Total Effective Plate-Supply Impedance per Plate <sup>▲</sup>	150 min. ohms
D-C Output Current	70 max. ma.
<b>With Choke-Input Filter:</b>	
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.

**AVERAGE PLATE CHARACTERISTIC**

TYPE 6X5  
E<sub>h</sub> = 6.3 VOLTS

ONE PLATE ONLY

PLATE MILLIAMPERES

PLATE VOLTS D.C.

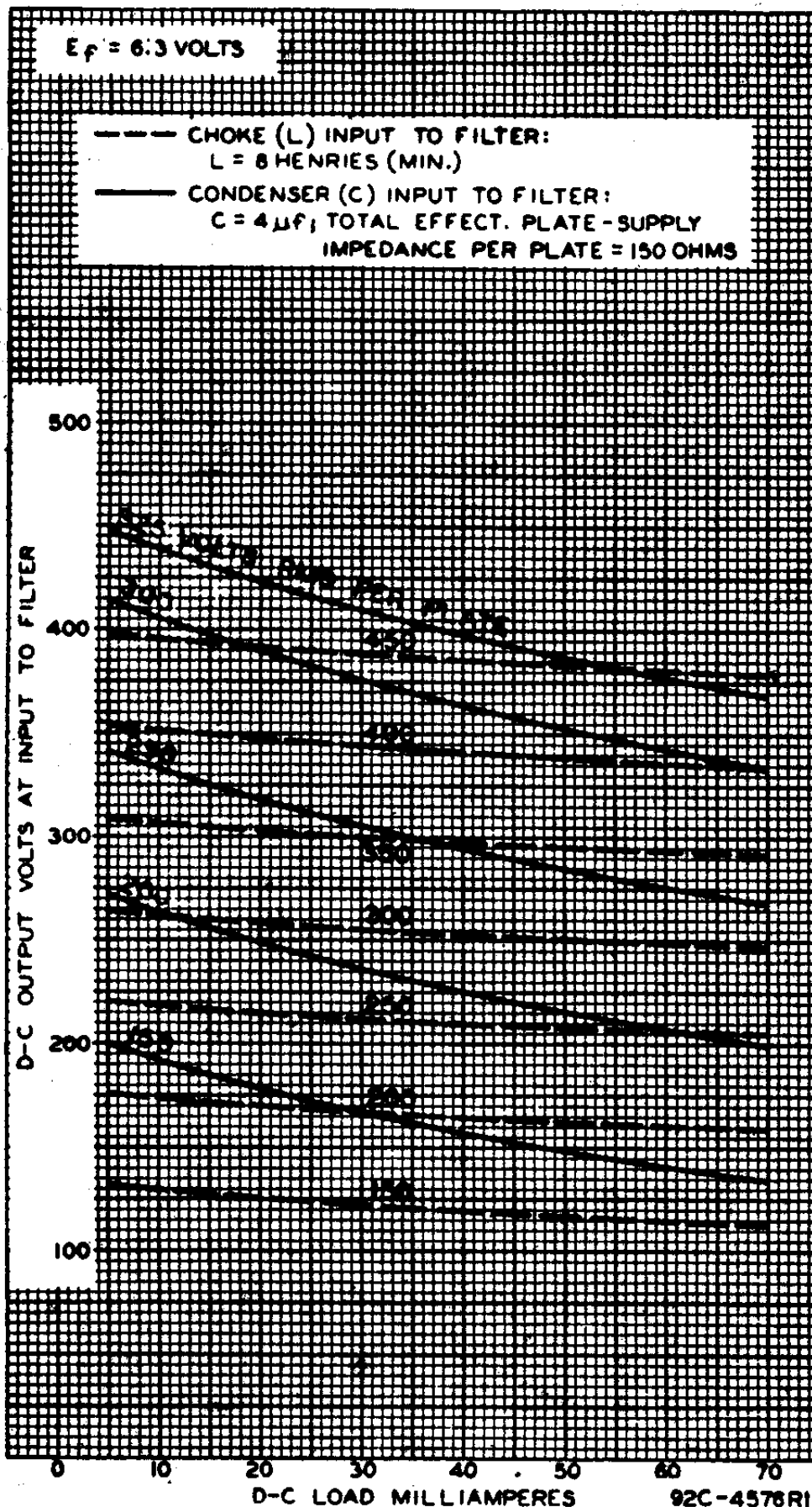
REC-6406

6X5-GT

# RADIOTRON

## 6X5-GT

### OPERATION CHARACTERISTICS



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

# RADIOTRON

34

## 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.		μμF
Input	6.0		μμF
Output	11.5		μμF
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	μmhos
Transcond.*	15	15	15	μmhos
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:

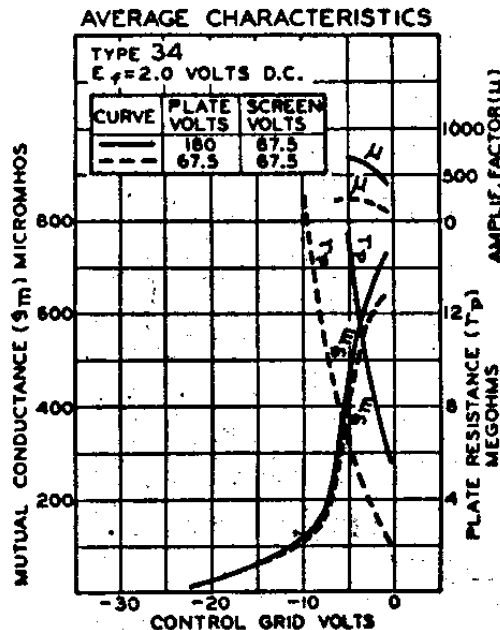
Filament	2.0	2.0	2.0	d-c volts
Plate Voltage	67.5	135	180 max.	volts
Screen Voltage	67.5	67.5	67.5	max. volts
Grid Voltage**	-5.0	-5.0	-5.0	approx. volts

⊙ 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.

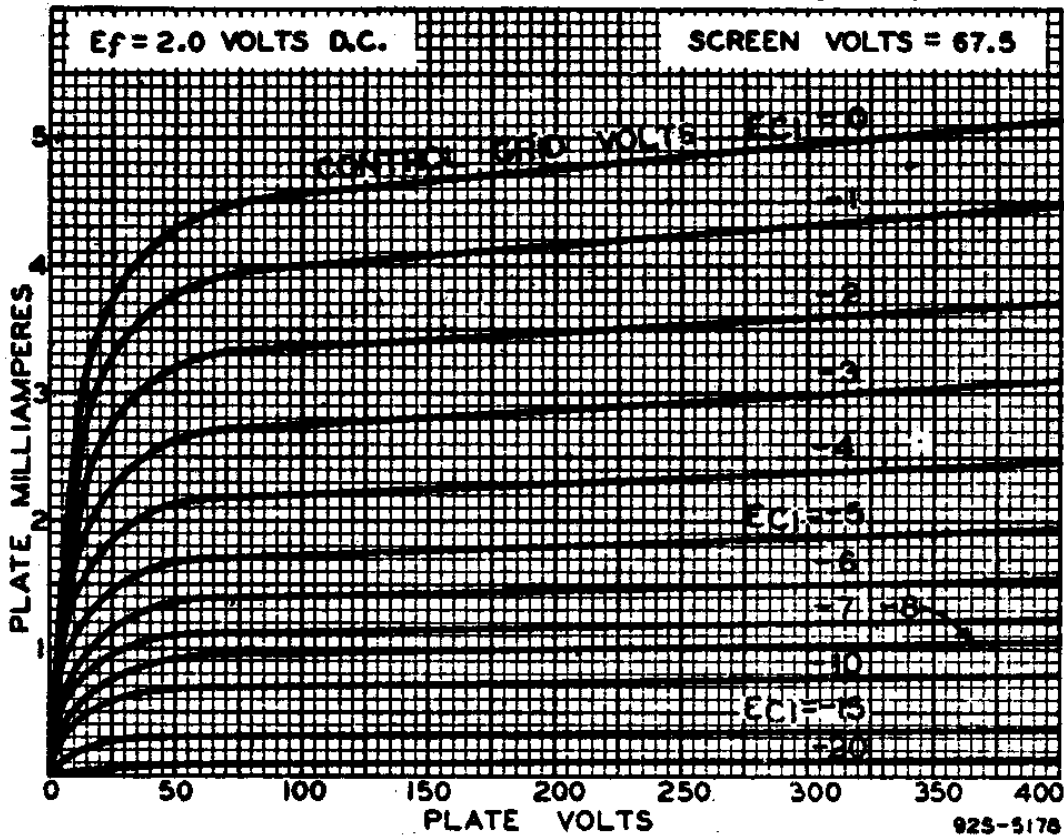
• Negative filament return. The grid circuit resistance should not exceed 3 megohms for a single controlled stage, 2.5 megohms for two controlled stages, or 3 megohms for three controlled stages.



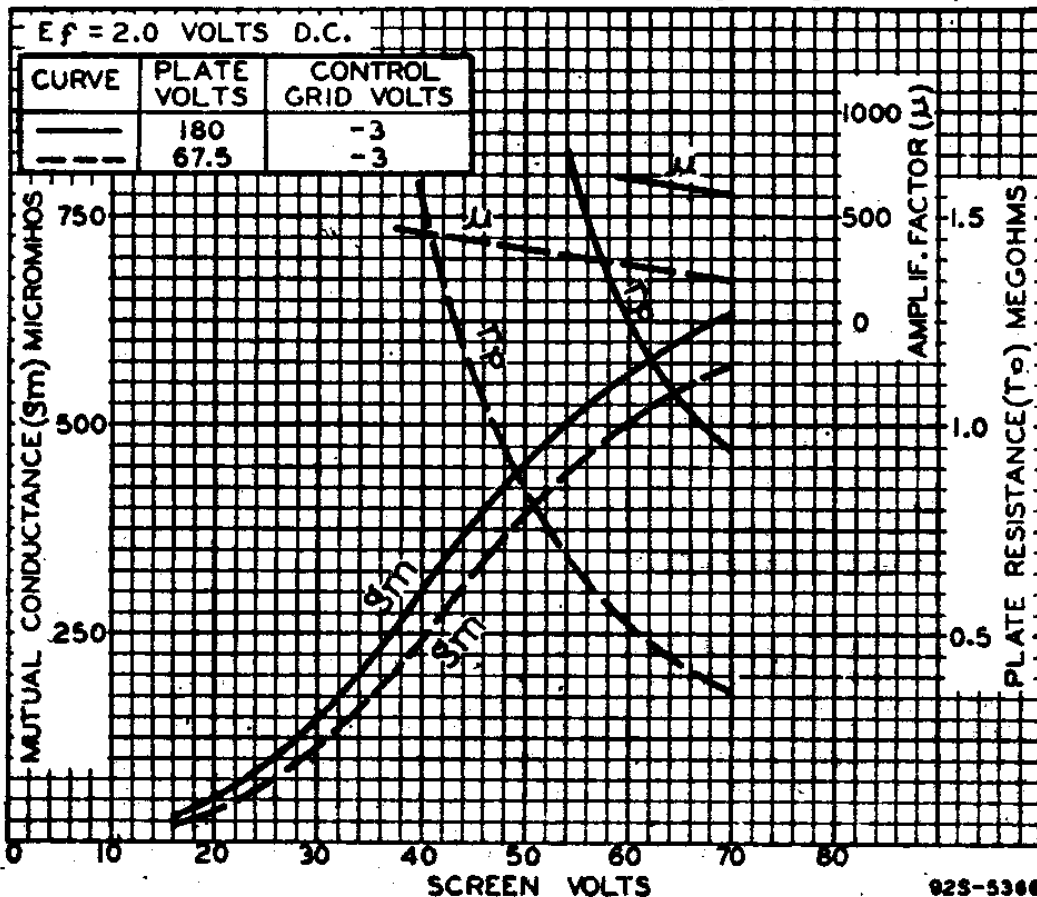
925-5365

# RADIOTRON

## AVERAGE PLATE CHARACTERISTICS



## AVERAGE CHARACTERISTICS



# RADIOTRON

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## 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>⊙</sup>	0.007 max.	μF
Input	5.3	μF
Output	10.5	μF
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 4-Cathode
Pin 2-Plate		Pin 5-Heater
Pin 3-Screen		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>⊙</sup>	-3	-3	min. volts
Plate Res.	0.3	0.4	megohm
Transcond.	1020	1050	μmhos
Transcond.*	15	15	μmhos
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

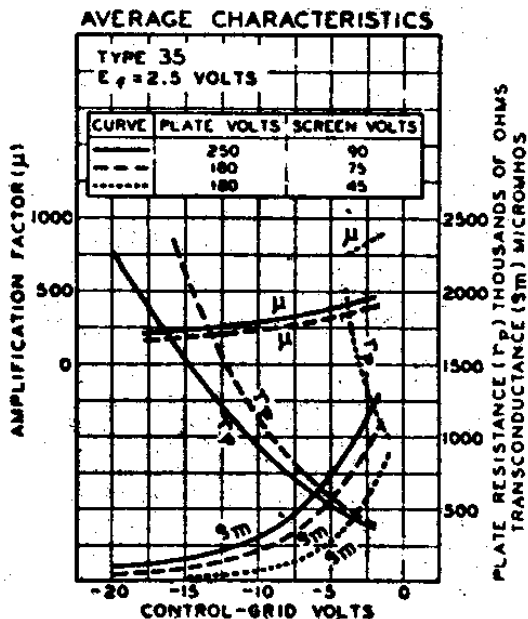
⊙ With shield-can connected to cathode

\* 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.

⊙ 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.



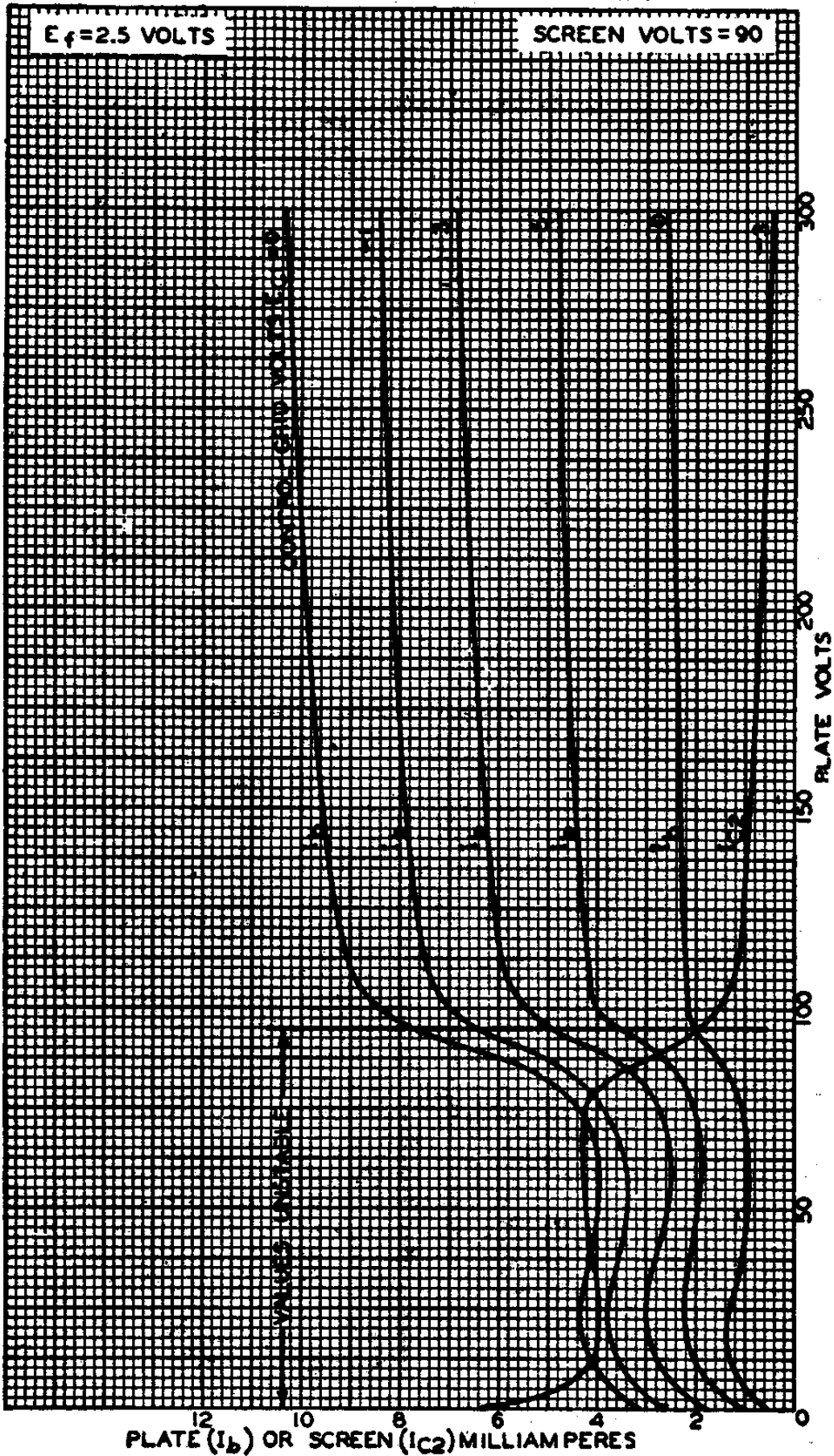
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35

# RADIOTRON

35

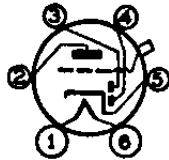
## AVERAGE PLATE CHARACTERISTICS



**RADIOTRON****85**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		$\mu\text{mf}$
Grid to Cathode	1.5		$\mu\text{mf}$
Plate to Cathode	4.3		$\mu\text{mf}$
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			any



BOTTOM VIEW

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	$\mu\text{mhos}$
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.

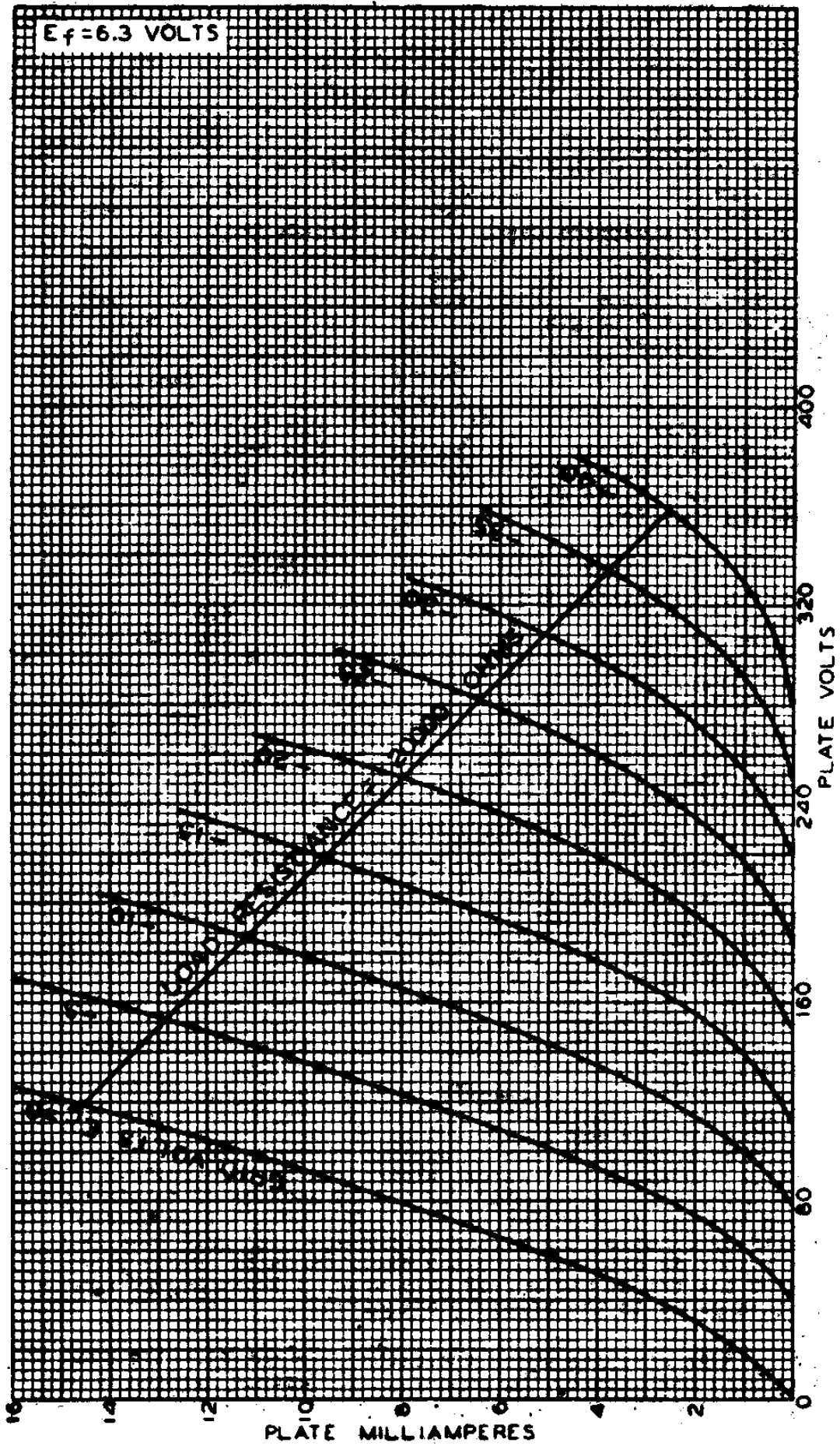


85

# RADIOTRON

85

## AVERAGE PLATE CHARACTERISTICS TRIODE UNIT




# 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.*	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
<p>□ Grids #2 and #3 tied to plate.</p> <p>* with shield-can. The internal shield within the dome of the 1603 is connected to the cathode within the tube.</p> <p>Type 1603 is similar electrically and in external dimensions to type 6C6 but is intended for applications which are critical as to microphonics.</p> <p>For maximum ratings, typical operating conditions and curves, see under type 6J7-G.</p>		
<p>— indicates a change.</p>		