



**ELECTRONIC
INNOVATIONS**
IN ACTION

TUBES

— PRODUCT INFORMATION —

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14BR11

Compactron Dissimilar-Double-Triode Pentode

- MULTIFUNCTION
- FOR LOW B+ BLACK-AND-WHITE TV
- HIGH-MU, HIGH-TRANSCONDUCTANCE TRIODE
- MEDIUM-MU TRIODE
- VIDEO AMPLIFIER PENTODE

The 14BR11 is a compactron containing a high-mu triode, a medium-mu triode, and a sharp-cutoff pentode. The high-mu triode is intended for audio i-f, AGC keyer and other general purpose uses, the medium-mu triode for sync separator service, and the pentode for video amplifier service.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC* 14.2 Volts

Heater Current • 0.45 ± 0.03 Amperes

Heater Warm-up Time, average ♦ 11 Seconds

Direct Interelectrode Capacitances, approximate ▲

Triode (Section 1)

Grid to Plate: (1Tg to 1Tp) 3.8 pf

Input: 1Tg to (1Tk + Pk + Pg3 + h + i.s.) 2.4 pf

Output: 1Tp to (1Tk + Pk + Pg3 + h + i.s.) 3.8 pf

Triode (Section 2)

Grid to Plate: (2Tg to 2Tp) 1.9 pf

Input: 2Tg to (1Tk + 2Tk + Pk + Pg3 + h + i.s.) ... 2.8 pf

Output: 2Tp to (1Tk + 2Tk + Pk + Pg3 + h + i.s.) ... 2.2 pf

Pentode Section

Grid-Number 1 to Plate: (Pg1 to Pp) 0.13 pf

Input: Pg1 to (2Tk + Pk + Pg2 + Pg3 + h + i.s.) ... 10 pf

Output: Pp to (2Tk + Pk + Pg2 + Pg3 + h + i.s.) ... 4.6 pf

Coupling

Pentode Plate to Triode Plate (Section 2):

(Pp to 2Tp) 0.16 pf

Triode Plate (Section 1) to Triode Plate (Section 2):

(1Tp to 2Tp), maximum 0.2 pf

MECHANICAL

Operating Position - Any

Envelope - T-9, Glass

Base - E12-70, Button 12-Pin

Outline Drawing - EIA 9-59

Maximum Diameter 1.188 Inches

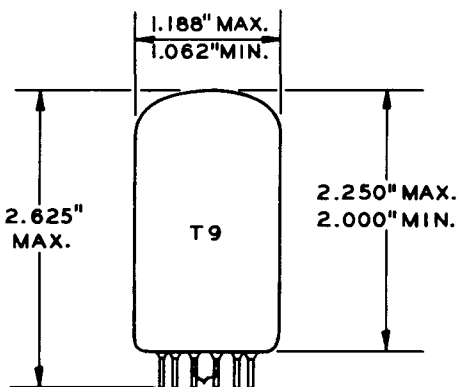
Minimum Diameter 1.062 Inches

Maximum Over-all Length 2.625 Inches

Maximum Seated Height 2.250 Inches

Minimum Seated Height 2.000 Inches

PHYSICAL DIMENSIONS

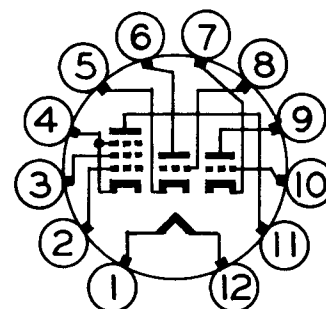


EIA 9-59

TERMINAL CONNECTIONS

- Pin 1 - Heater
- Pin 2 - Pentode Grid Number 1
- Pin 3 - Pentode Grid Number 2 (Screen)
- Pin 4 - Pentode Cathode, Grid Number 3, and Internal Shield
- Pin 5 - Triode Cathode (Section 2) and Internal Shield
- Pin 6 - Triode Plate (Section 2)
- Pin 7 - Triode Cathode (Section 1)
- Pin 8 - Triode Grid (Section 2)
- Pin 9 - Triode Plate (Section 1)
- Pin 10 - Triode Grid (Section 1)
- Pin 11 - Pentode Plate
- Pin 12 - Heater

BASING DIAGRAM



EIA 12GL

The tubes and arrangements disclosed herein may be covered by patents of General Electric Company or others. Neither the disclosure of any information herein nor the sale of tubes by General Electric Company conveys any license under patent claims covering combinations of tubes with other devices or elements. In the absence of an

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GENERAL ELECTRIC

Supersedes 14BR11 PI Sheet dated 9-65

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES

Pentode Section

Plate Voltage	330	Volts
Screen Supply Voltage	330	Volts
Screen Voltage - See Screen Rating Chart		
Positive DC Grid-Number 1 Voltage	0	Volts
Plate Dissipation	4.0	Watts
Screen Dissipation	1.1	Watts
Heater-Cathode Voltage		
Heater Positive with respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with respect to Cathode		
Total DC and Peak	200	Volts
Grid-Number 1 Circuit Resistance		
With Fixed Bias	1.0	Megohms
With Cathode Bias	1.0	Megohms

Triode (Section 1)

Plate Voltage	330	Volts
Positive DC Grid Voltage	0	Volts
Plate Dissipation	2.0	Watts
Heater-Cathode Voltage		
Heater Positive with respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with respect to Cathode		
Total DC and Peak	200	Volts
Grid Circuit Resistance		
With Fixed Bias	0.5	Megohms
With Cathode Bias	1.0	Megohms

Triode (Section 2)

Plate Voltage	330	Volts
Positive DC Grid Voltage	0	Volts
Plate Dissipation	1.5	Watts
Heater-Cathode Voltage		
Heater Positive with respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with respect to Cathode		
Total DC and Peak	200	Volts
Grid Circuit Resistance		
With Fixed Bias	0.5	Megohms
With Cathode Bias	1.0	Megohms

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS

Pentode Section

Plate Voltage	35	135	Volts
Screen Voltage	135	135	Volts
Grid-Number 1 Voltage	0	---	Volts
Cathode-Bias Resistor	---	100	Ohms
Plate Resistance, approximate	---	45000	Ohms
Transconductance	---	10400	Micromhos
Plate Current	34	17	Milliamperes
Screen Current	13	4.0	Milliamperes
Grid-Number 1 Voltage, approximate Ib = 100 Microamperes	---	-6	Volts

Triode (Section 1)

Plate Voltage	200	Volts
Cathode-Bias Resistor	220	Ohms
Amplification Factor	41	
Plate Resistance, approximate	9400	Ohms
Transconductance	4400	Micromhos
Plate Current	9.2	Milliamperes
Grid Voltage, approximate Ib = 100 Microamperes	-6.5	Volts

Triode (Section 2)

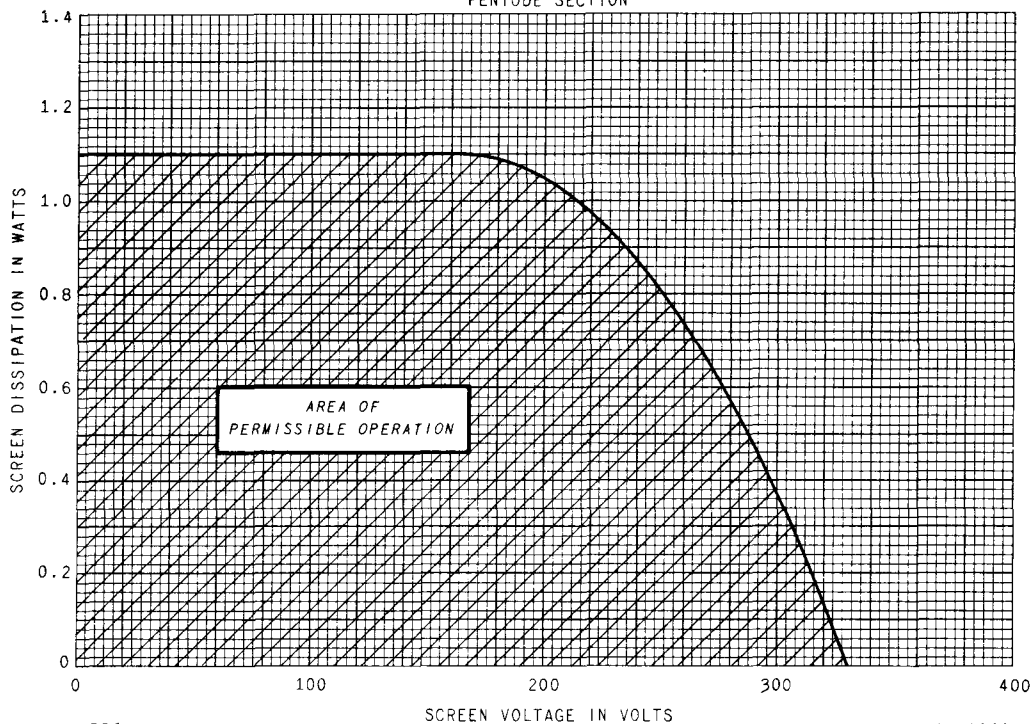
Plate Voltage	200	Volts
Grid Voltage	-2.0	Volts
Amplification Factor	68	
Plate Resistance, approximate	12400	Ohms
Transconductance	5500	Micromhos
Plate Current	7.0	Milliamperes
Grid Voltage, approximate Ib = 100 Microamperes	-5.5	Volts

NOTES

- ★ Heater voltage for a bogey tube at If = 0.45 amperes.
- The equipment designer should design the equipment so that heater current is centered at the specified bogey value, with heater supply variations restricted to maintain heater current within the specified tolerance.
- ◆ The time required for the voltage across the heater to reach 80 percent of the bogey value after applying 4 times the bogey heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the bogey heater voltage divided by the bogey heater current.
- ▲ Without external shield.

SCREEN RATING CHART

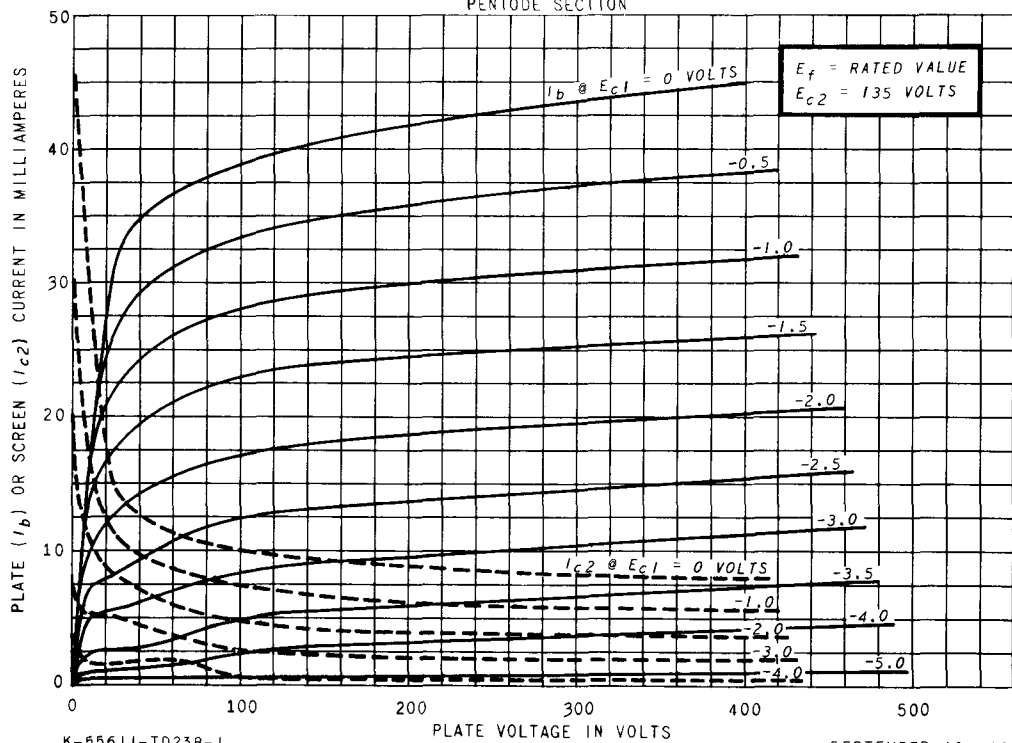
PENTODE SECTION



MAY 1, 1962

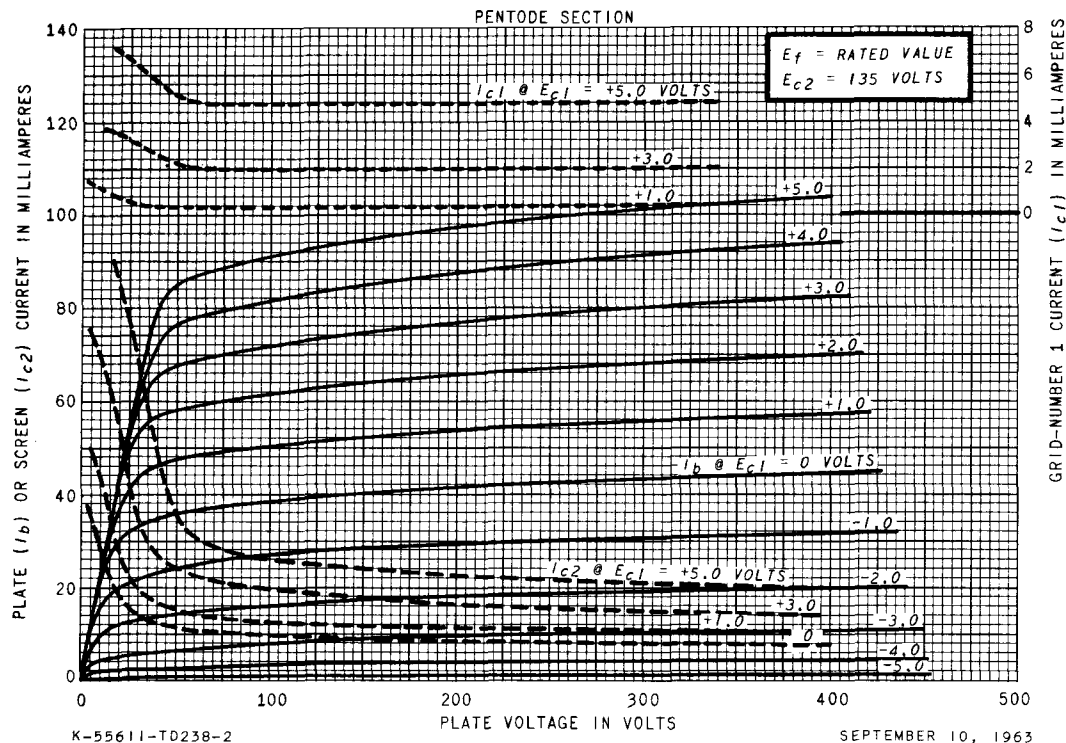
AVERAGE PLATE CHARACTERISTICS

PENTODE SECTION

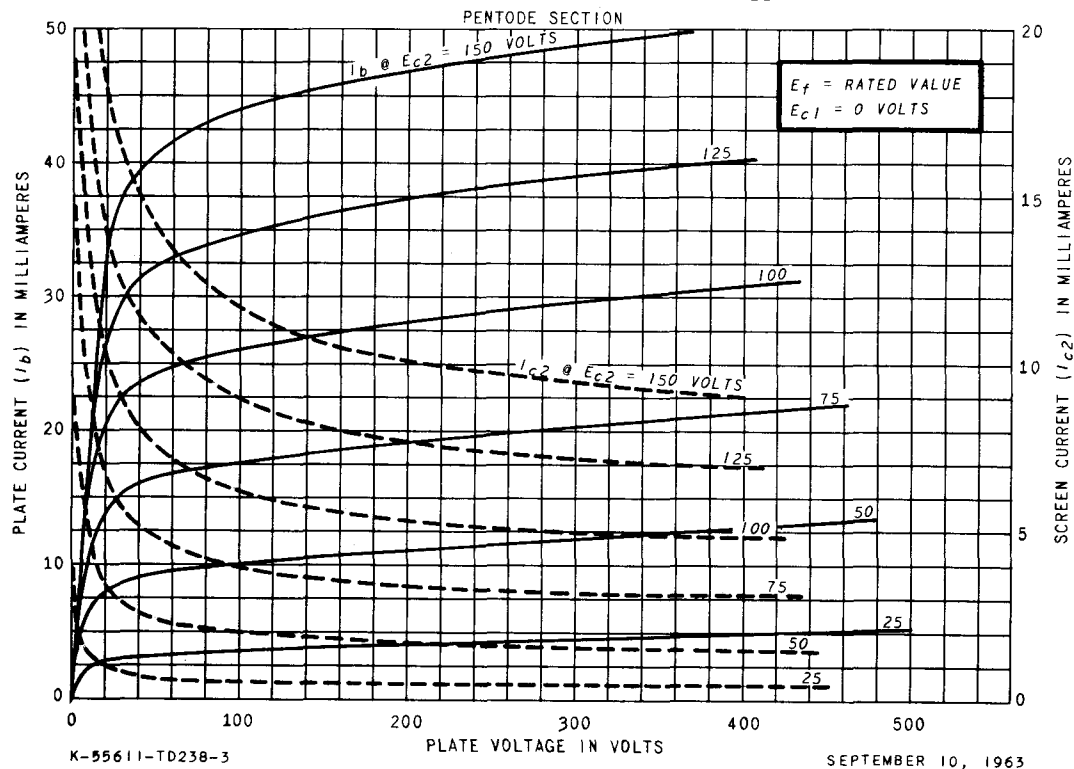


SEPTEMBER 10, 1963

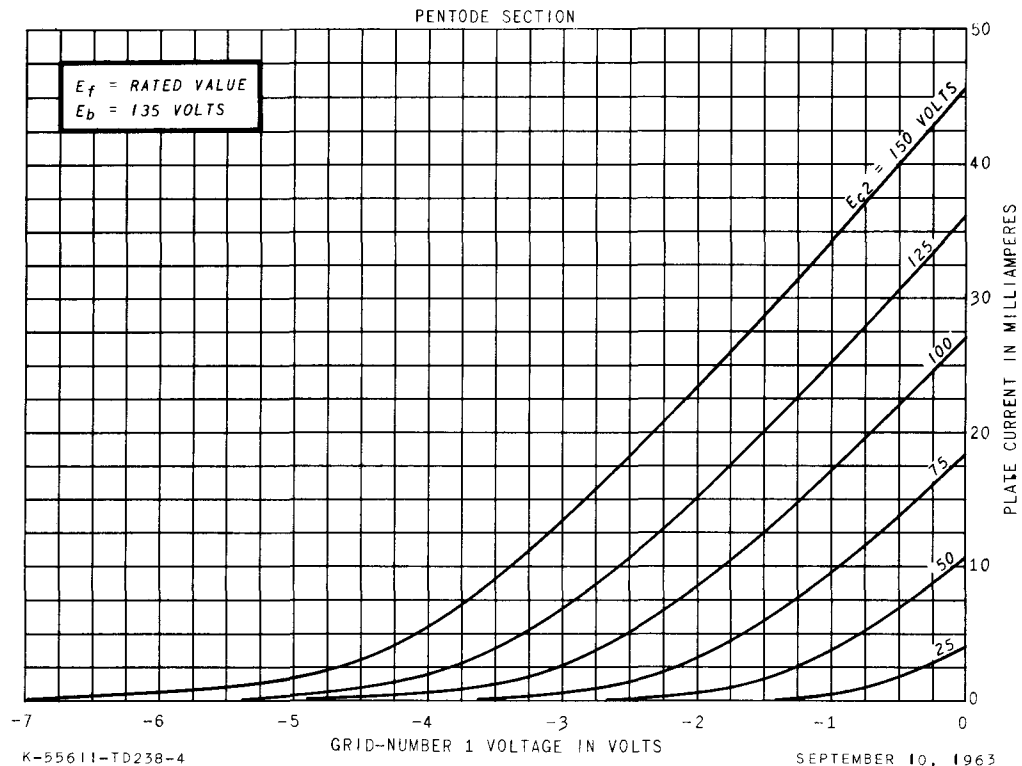
AVERAGE PLATE CHARACTERISTICS



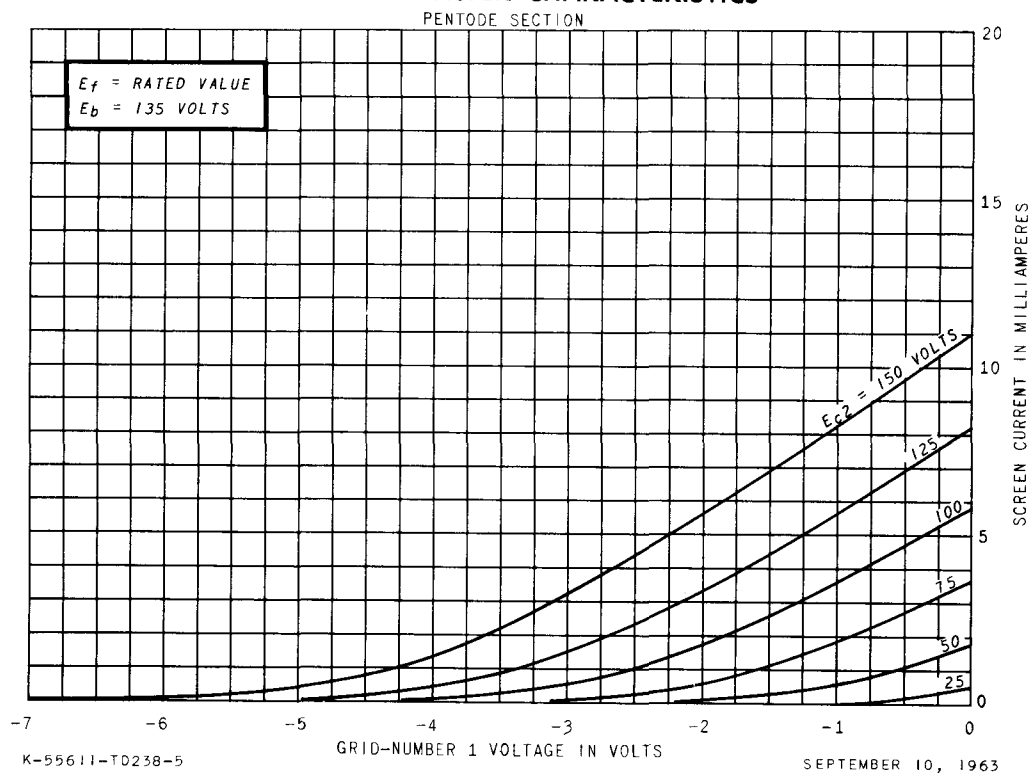
AVERAGE PLATE CHARACTERISTICS



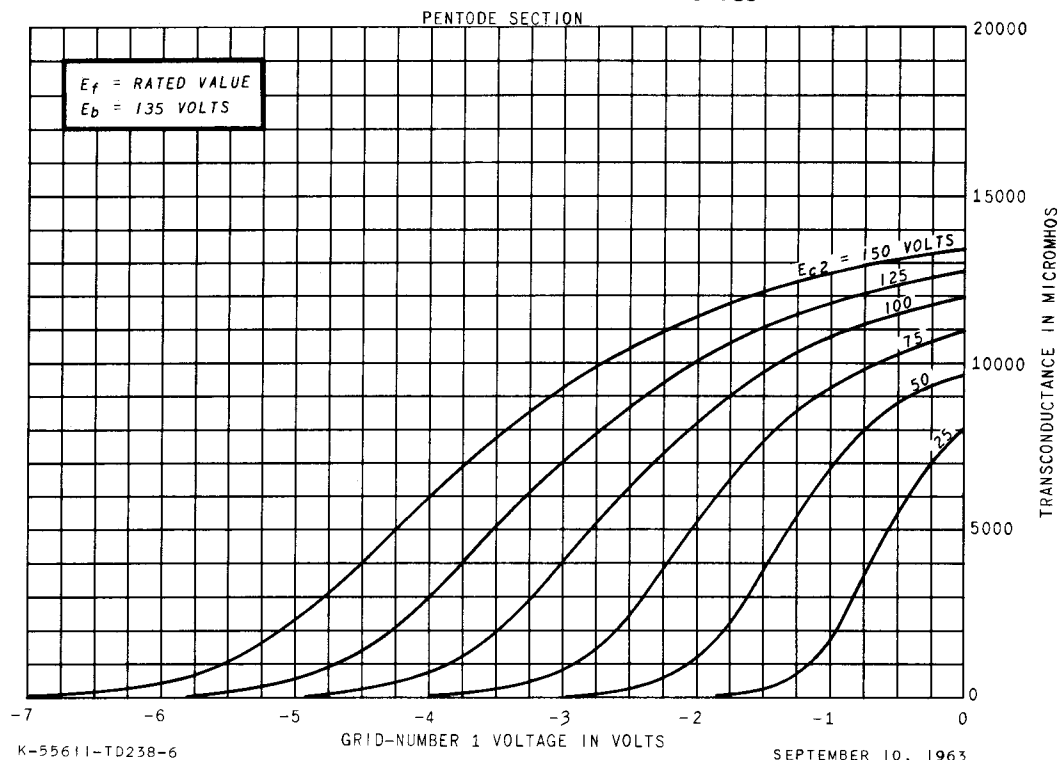
AVERAGE TRANSFER CHARACTERISTICS



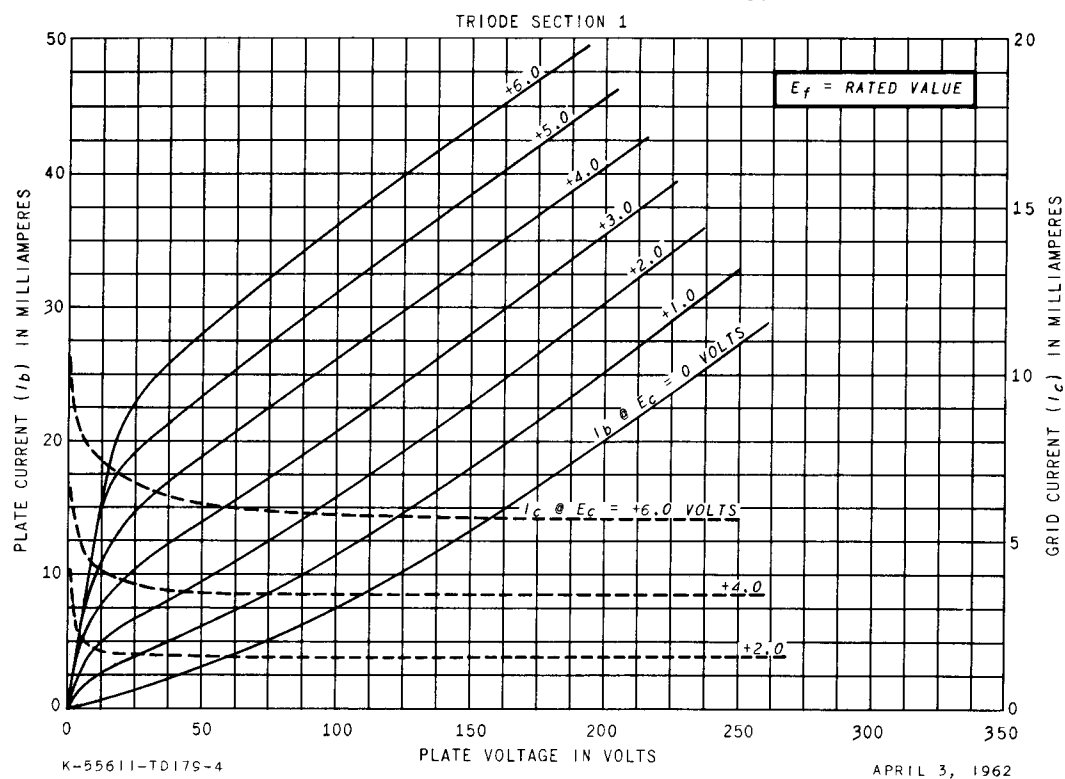
AVERAGE TRANSFER CHARACTERISTICS



AVERAGE TRANSFER CHARACTERISTICS

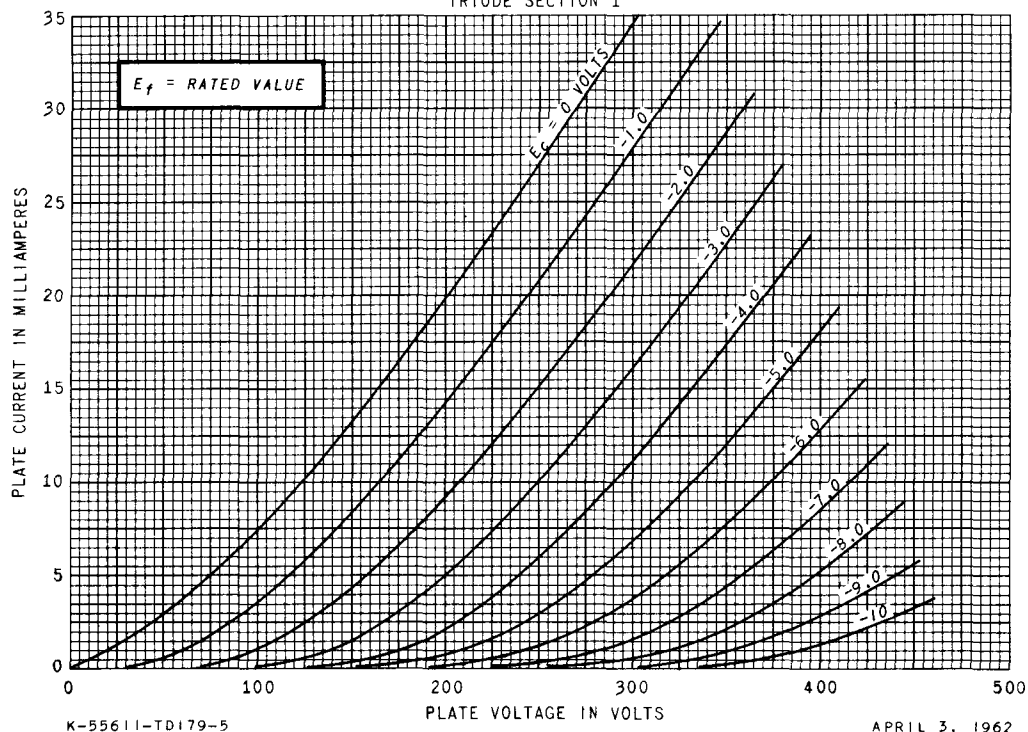


AVERAGE PLATE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS

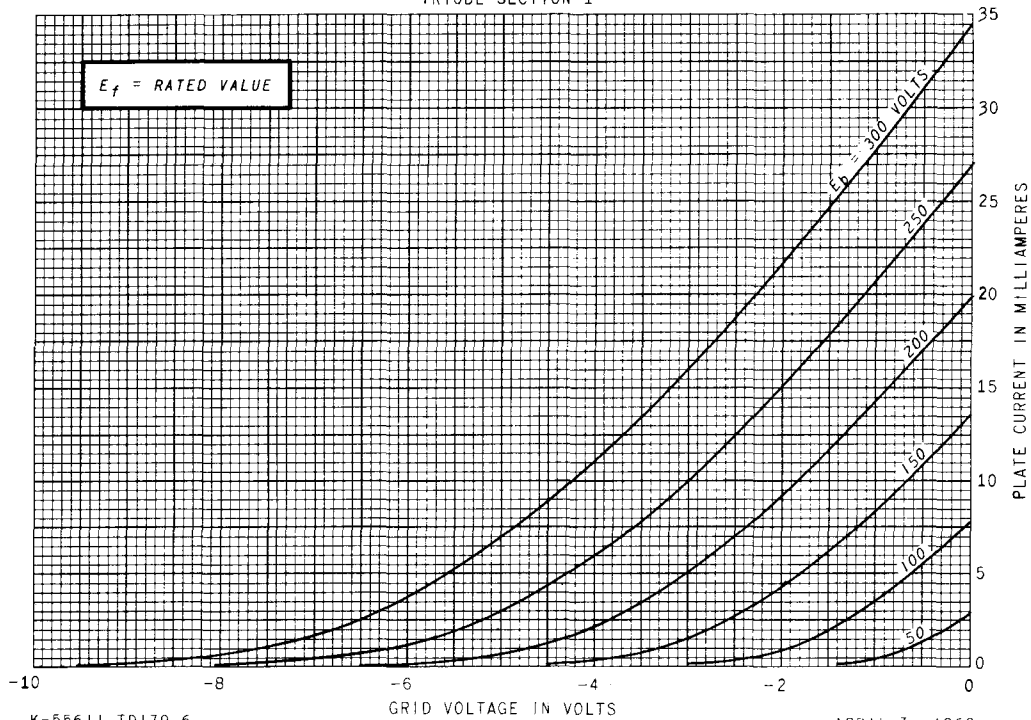
TRIODE SECTION 1



APRIL 3, 1962

AVERAGE TRANSFER CHARACTERISTICS

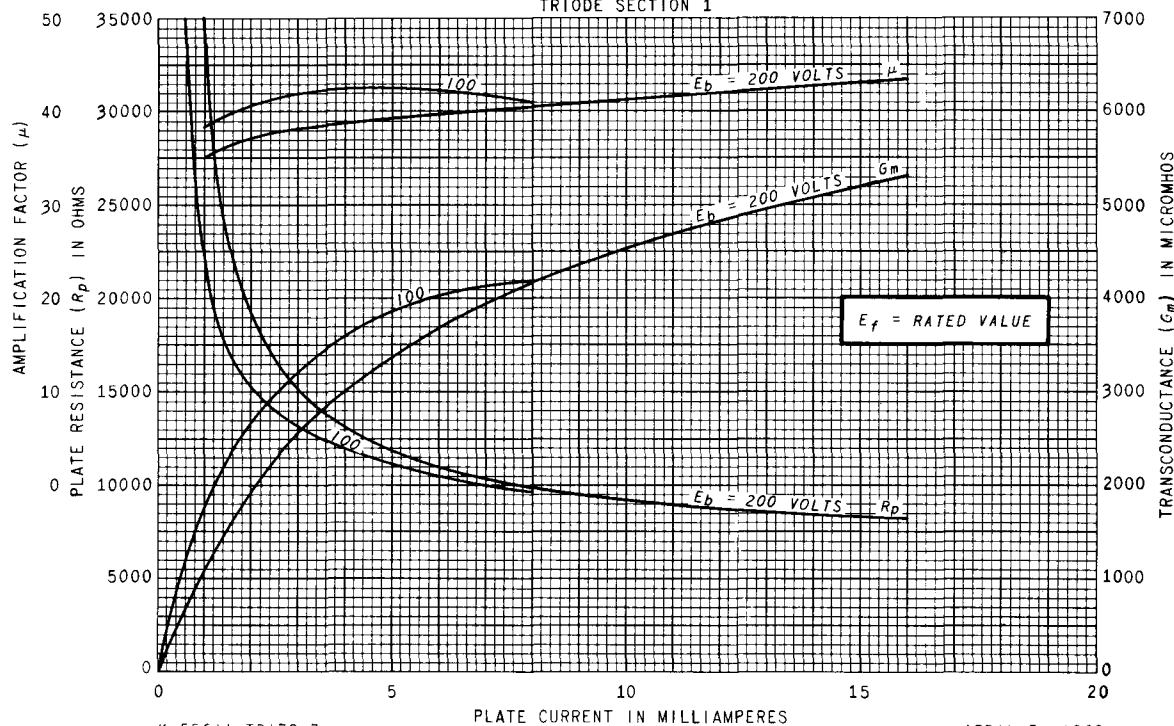
TRIODE SECTION 1



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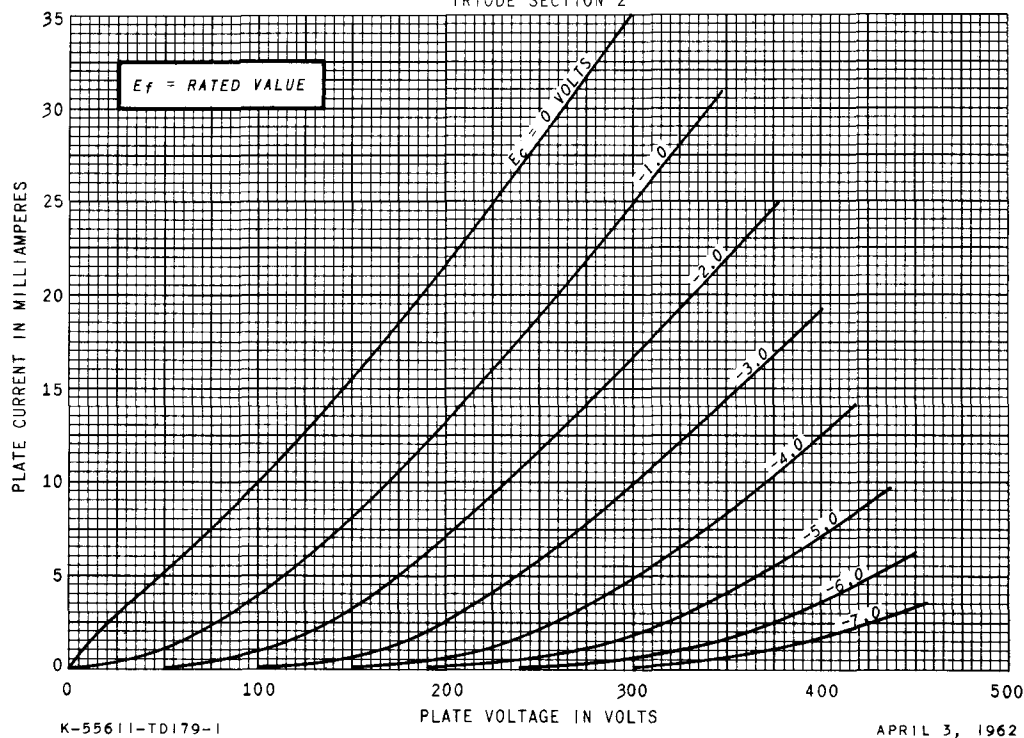
AVERAGE CHARACTERISTICS

TRIODE SECTION 1



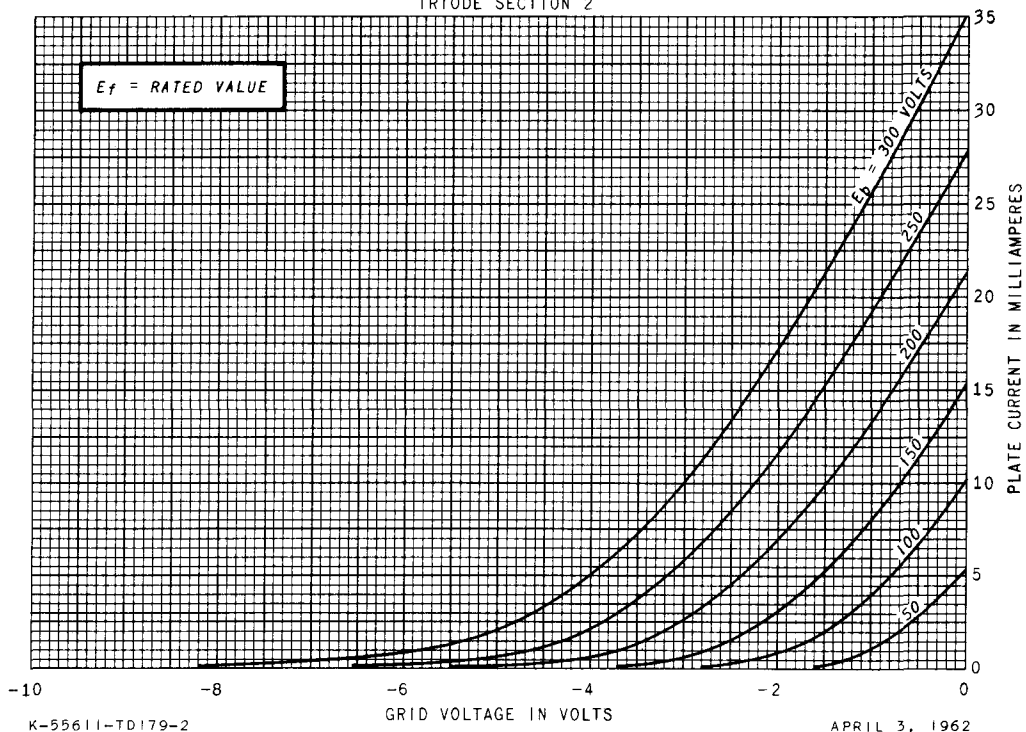
AVERAGE PLATE CHARACTERISTICS

TRIODE SECTION 2



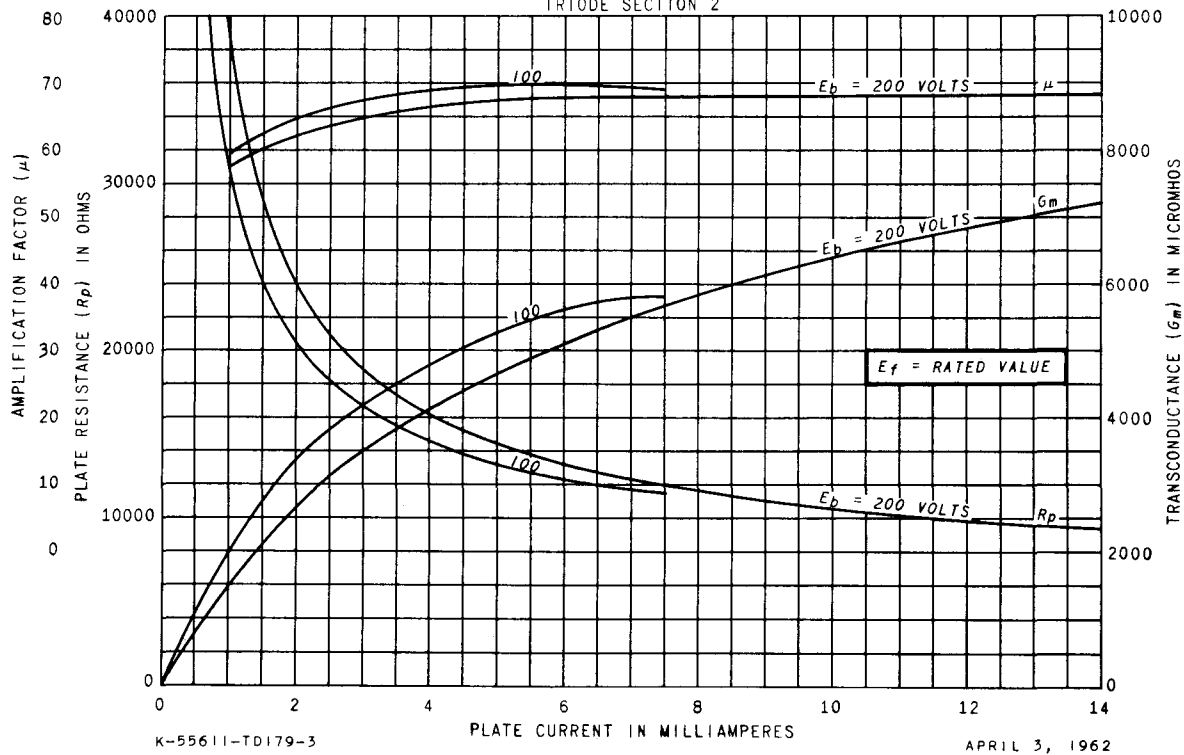
AVERAGE TRANSFER CHARACTERISTICS

TRIODE SECTION 2



AVERAGE CHARACTERISTICS

TRIODE SECTION 2



TUBE DEPARTMENT

GENERAL  ELECTRIC

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