



## COMPACTRON DISSIMILAR-DOUBLE-TRIODE PENTODE

## DESCRIPTION AND RATING

The 6BD11 is a compactron containing a high- $\mu$  triode, a medium- $\mu$  triode, and a sharp-cutoff pentode. The high- $\mu$  triode is intended for general-purpose use, 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\* . . . 6.3 $\pm$ 0.6 Volts

Heater Current† . . . 1.05 Amperes

Direct Interelectrode Capacitances‡

## Triode (Section 1)

Grid to Plate: (1Tg to 1Tp) . . . 1.9 pf

Input: 1Tg to (1Tk + 2Tk + Pk + Pg3 +  
h + i.s.) . . . 3.0 pf

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

## Triode (Section 2)

Grid to Plate: (2Tg to 2Tp) . . . 3.6 pf

Input: 2Tg to (2Tk + Pk + Pg3 + h +  
i.s.) . . . 2.4 pf

Output: 2Tp to (2Tk + Pk + Pg3 +  
h + i.s.) . . . 3.8 pf

## Pentode Section

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

Input: Pg1 to (2Tk + Pk + Pg2 + Pg3 +  
h + i.s.) . . . 11 pf

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

Pentode Plate to Triode Plate (Section

2): (Pp to 2Tp), maximum . . . 0.045 pf

Triode Plate (Section 1) to Triode

Plate (Section 2): (1Tp to 2Tp),  
maximum . . . 0.075 pf

## MECHANICAL

Operating Position - Any

Envelope - T-9, Glass

Base - E12-70, Button 12-Pin

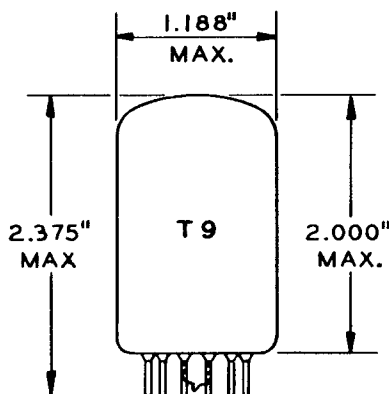
Outline Drawing - EIA 9-58

Maximum Diameter . . . 1.188 Inches

Maximum Over-all Length . . . 2.375 Inches

Maximum Seated Height . . . 2.000 Inches

## PHYSICAL DIMENSIONS

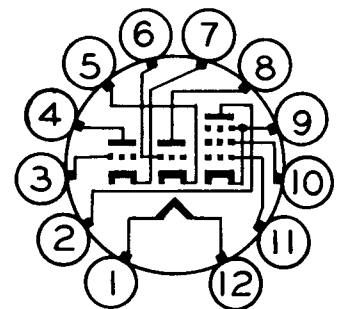


EIA 9-58

## TERMINAL CONNECTIONS

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

## BASING DIAGRAM



EIA 12DP

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express written agreement to the contrary, General Electric Company assumes no liability for patent infringement arising out of any use of the tubes with other devices or elements by any purchaser of tubes or others.

## 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 . . . . .             | 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 |

## Triode (Section 2)

|                                         |     |         |
|-----------------------------------------|-----|---------|
| 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 |

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<br>Ib = 100 Microamperes . . . . . | --- | -6    | Volts        |

### Triode (Section 1)

|                                                              |       |              |
|--------------------------------------------------------------|-------|--------------|
| 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<br>Ib = 100 Microamperes . . . . . | -5.5  | Volts        |

### Triode (Section 2)

|                                                              |      |              |
|--------------------------------------------------------------|------|--------------|
| 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<br>Ib = 100 Microamperes . . . . . | -6.5 | Volts        |

## NOTES

\* The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.

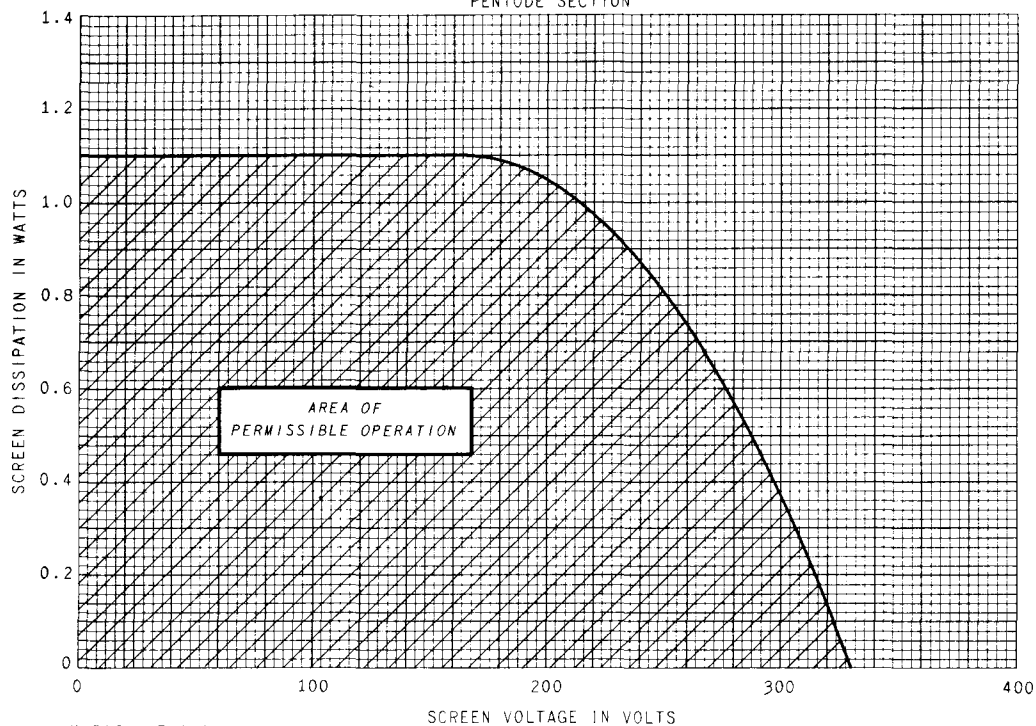
† Heater current of a bogey tube at Ef = 6.3 volts.

‡ Without external shield.

§ Applied for short interval (two seconds maximum) so as not to damage tube.

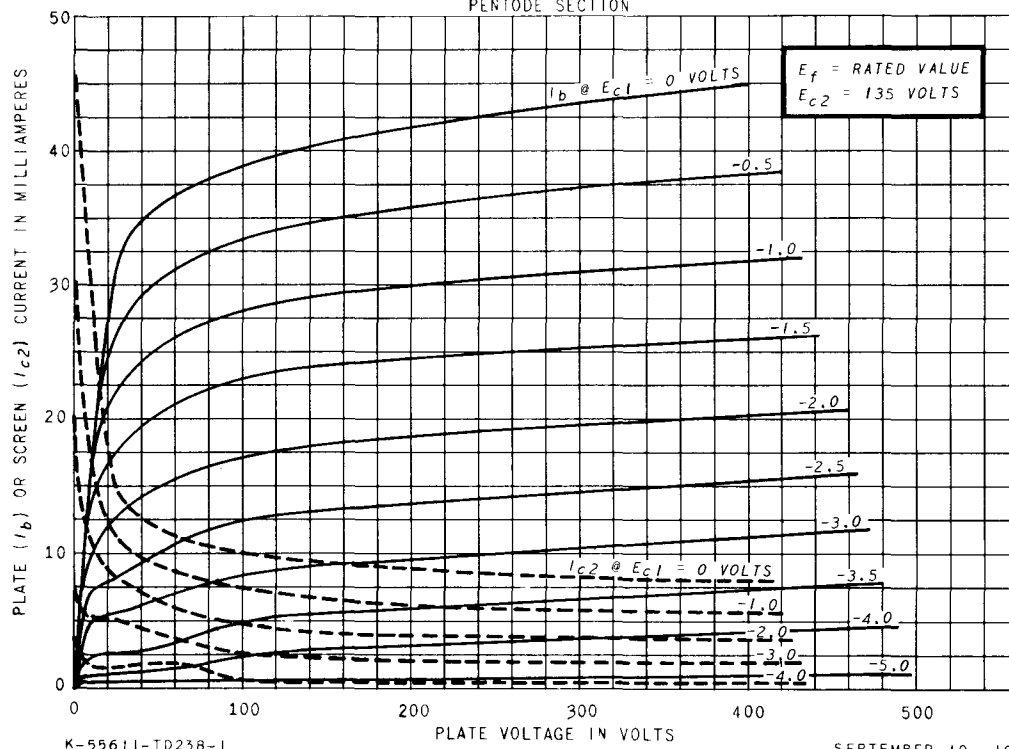
## SCREEN RATING CHART

PENTODE SECTION

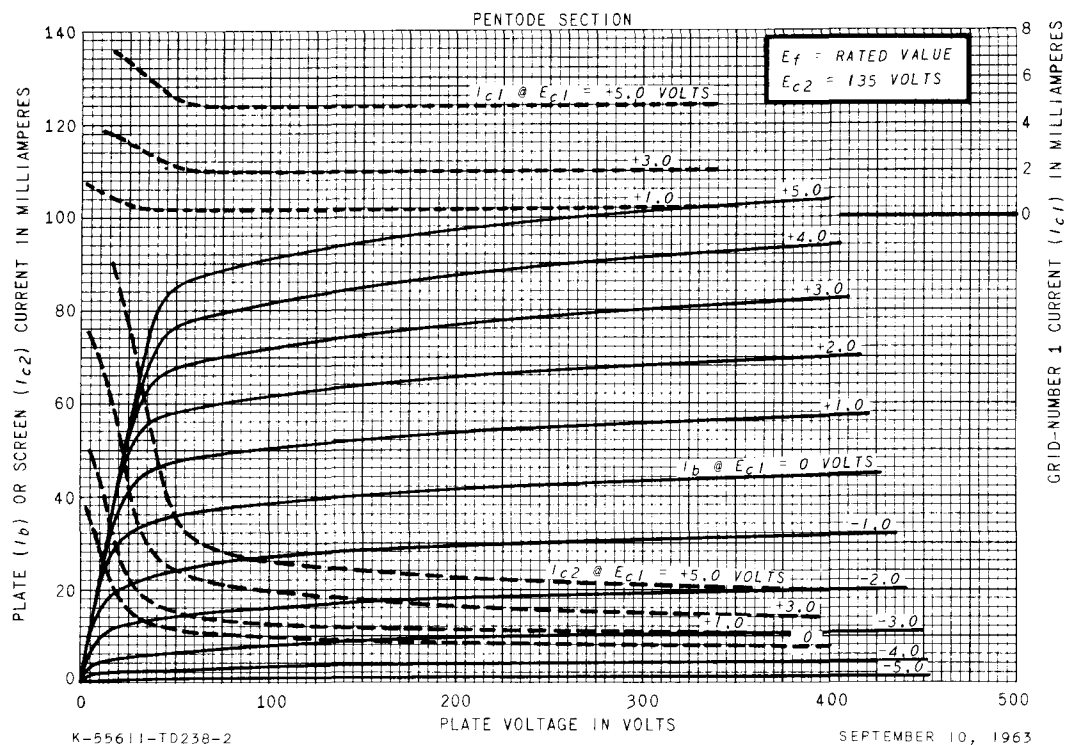


## AVERAGE PLATE CHARACTERISTICS

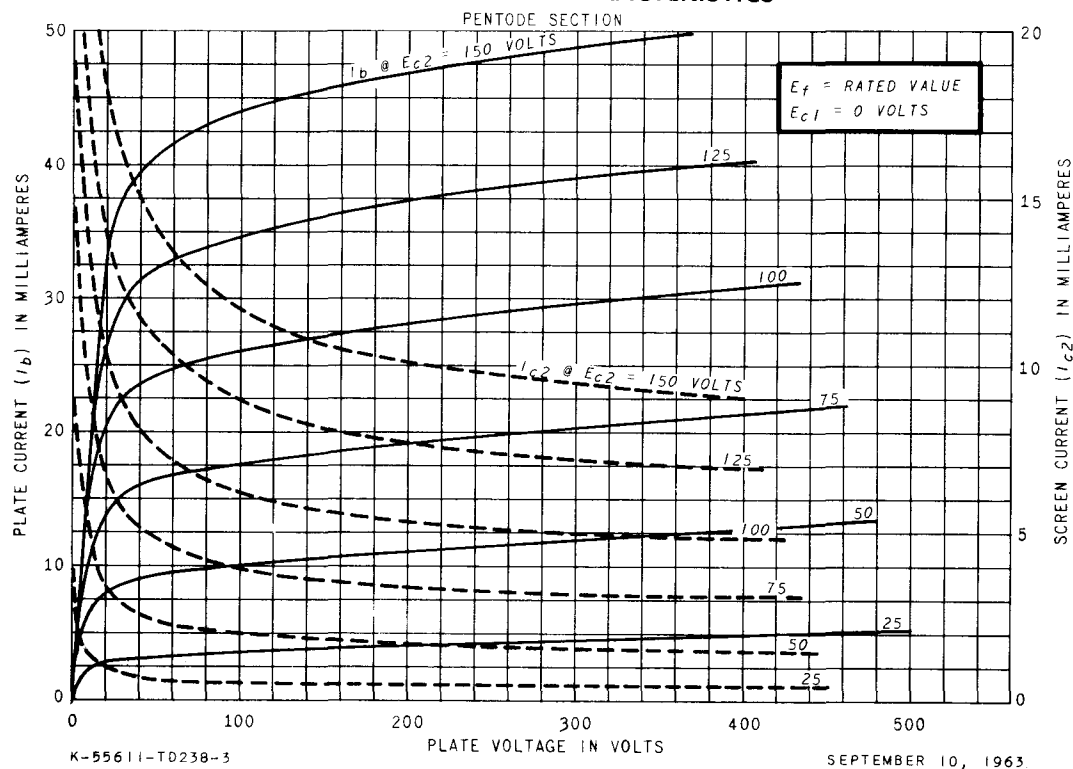
PENTODE SECTION



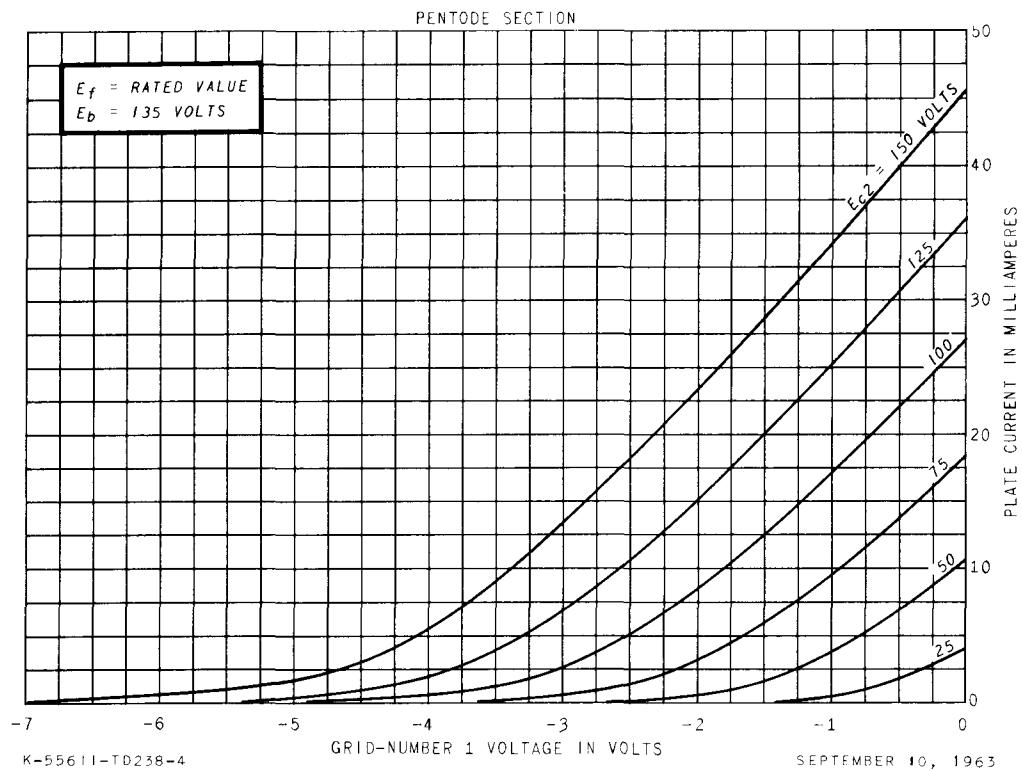
## AVERAGE PLATE CHARACTERISTICS



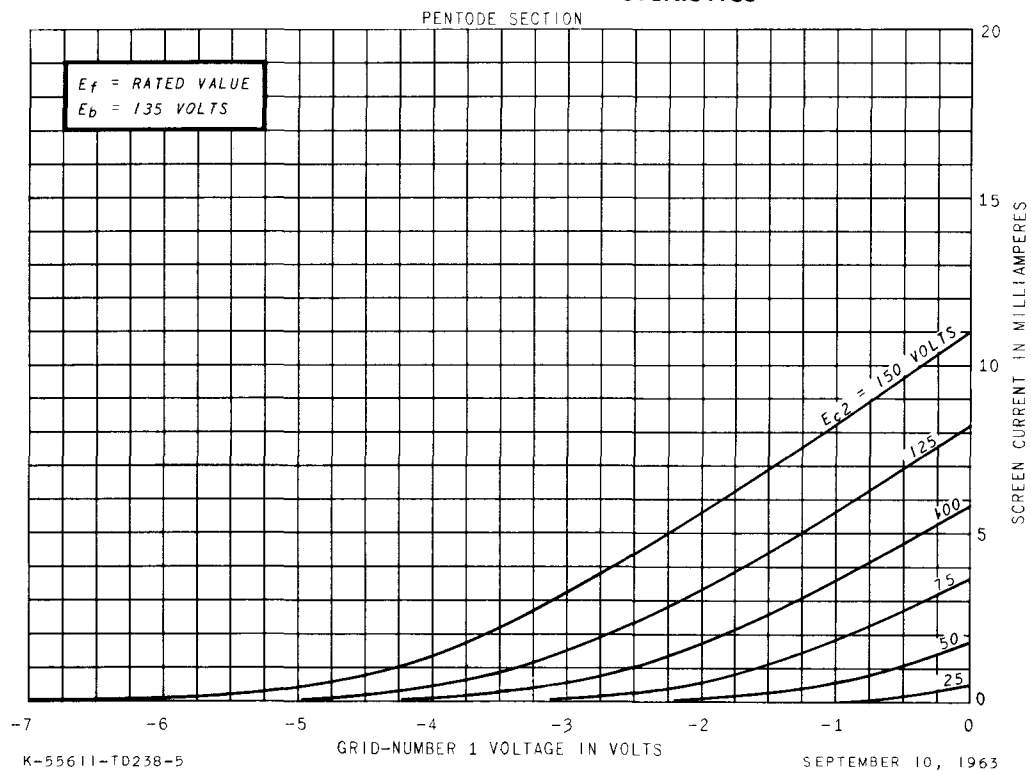
## AVERAGE PLATE CHARACTERISTICS



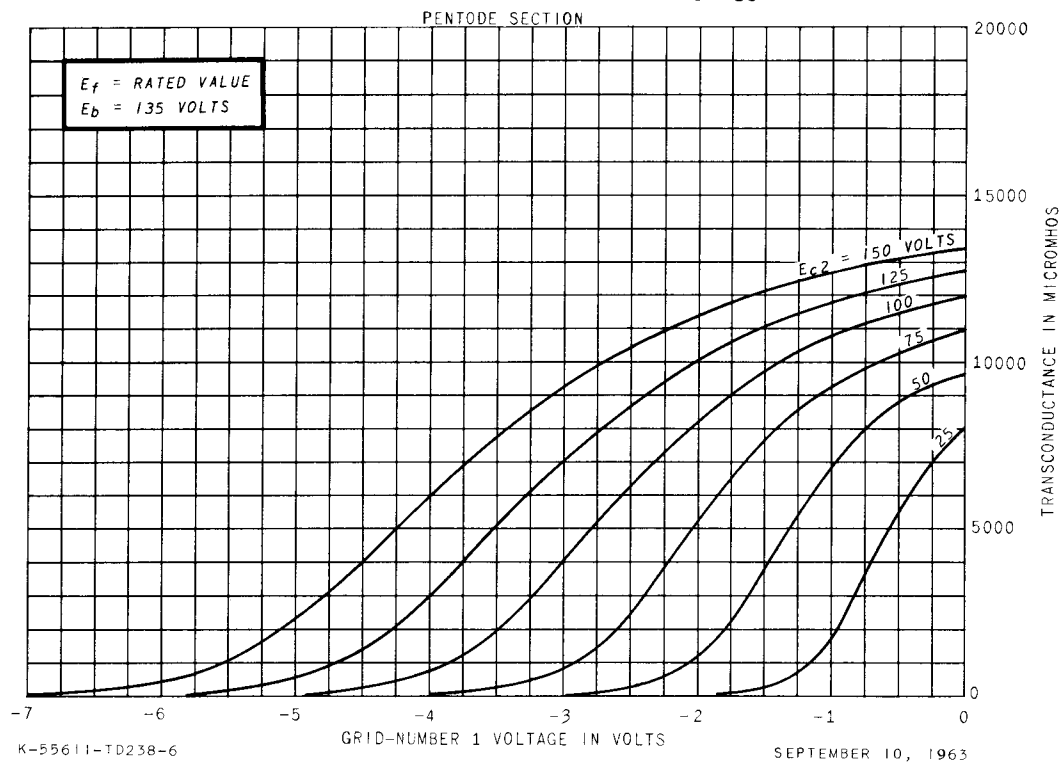
## AVERAGE TRANSFER CHARACTERISTICS



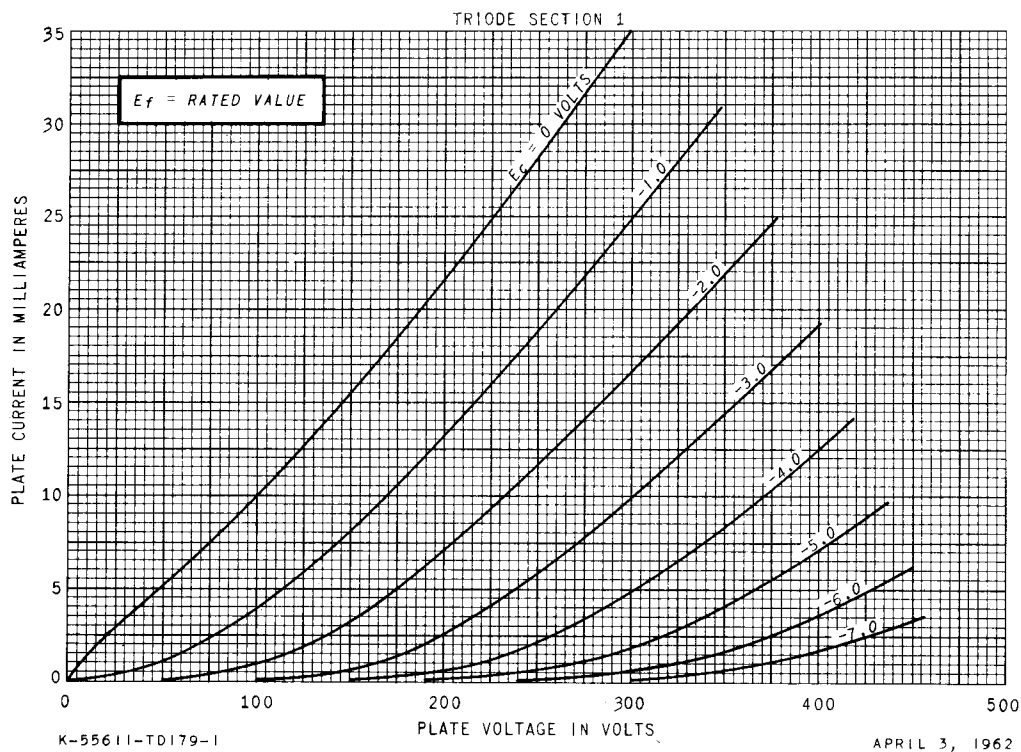
## AVERAGE TRANSFER CHARACTERISTICS



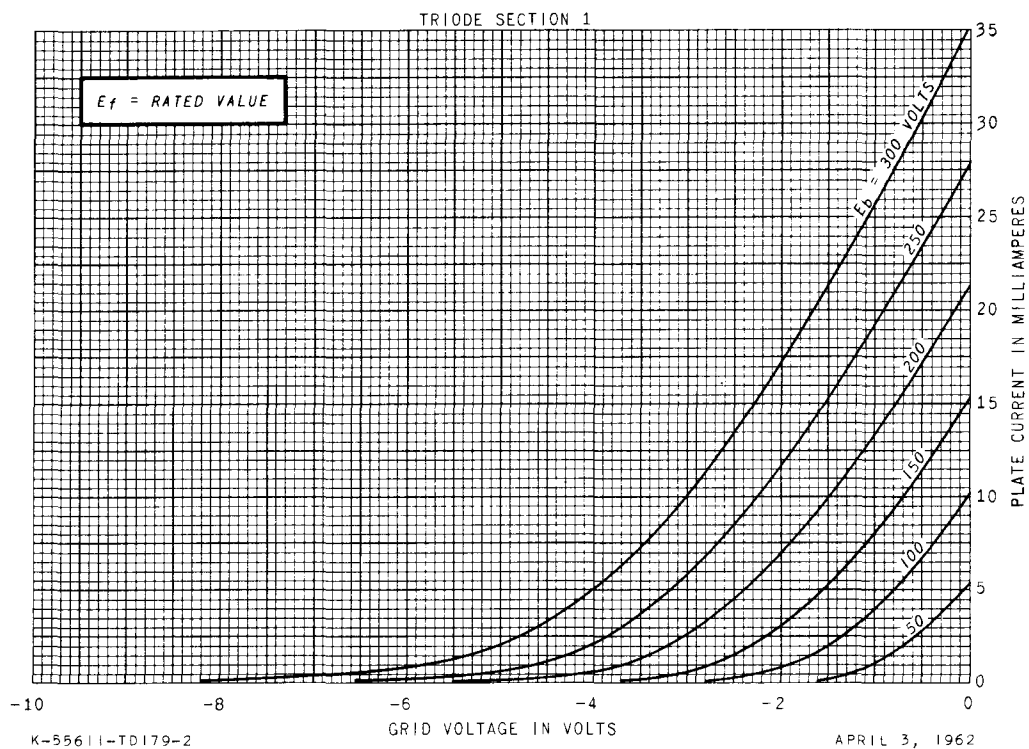
## AVERAGE TRANSFER CHARACTERISTICS



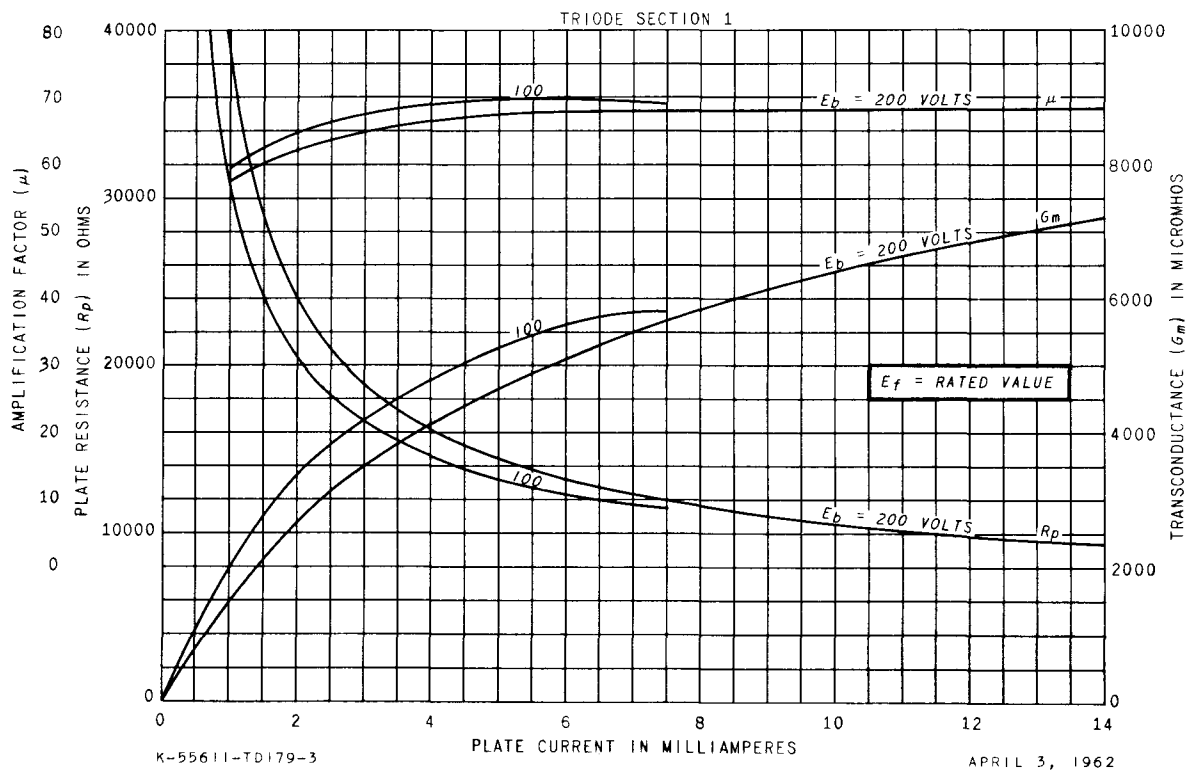
## AVERAGE PLATE CHARACTERISTICS



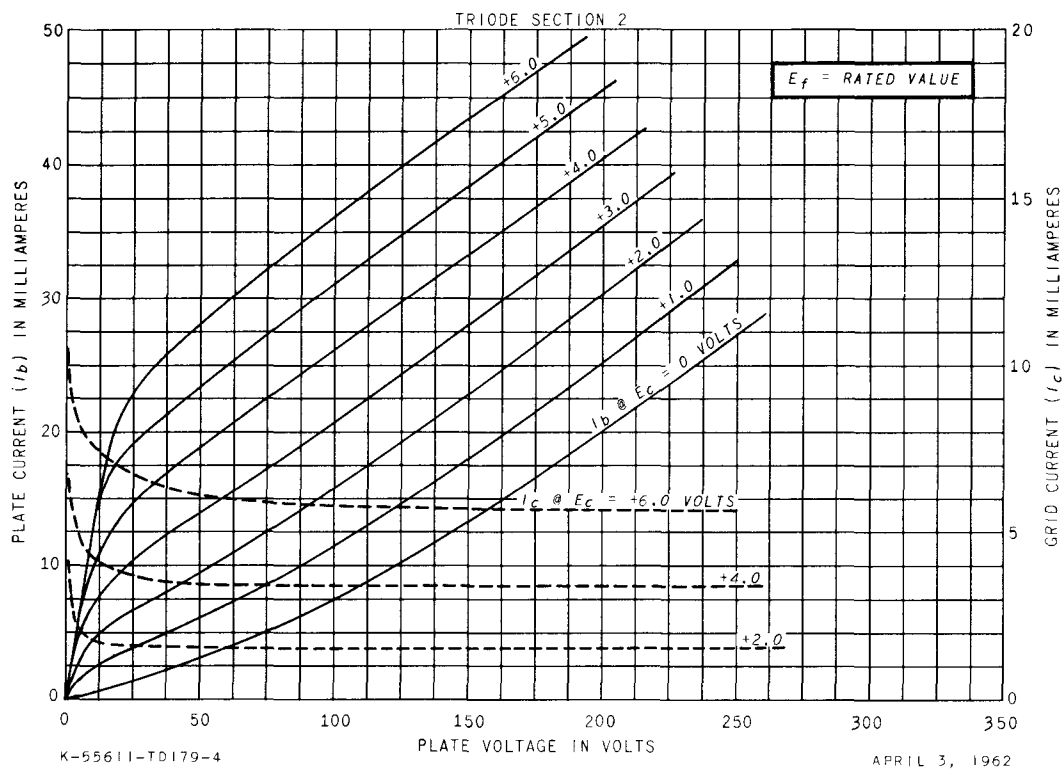
## AVERAGE TRANSFER CHARACTERISTICS



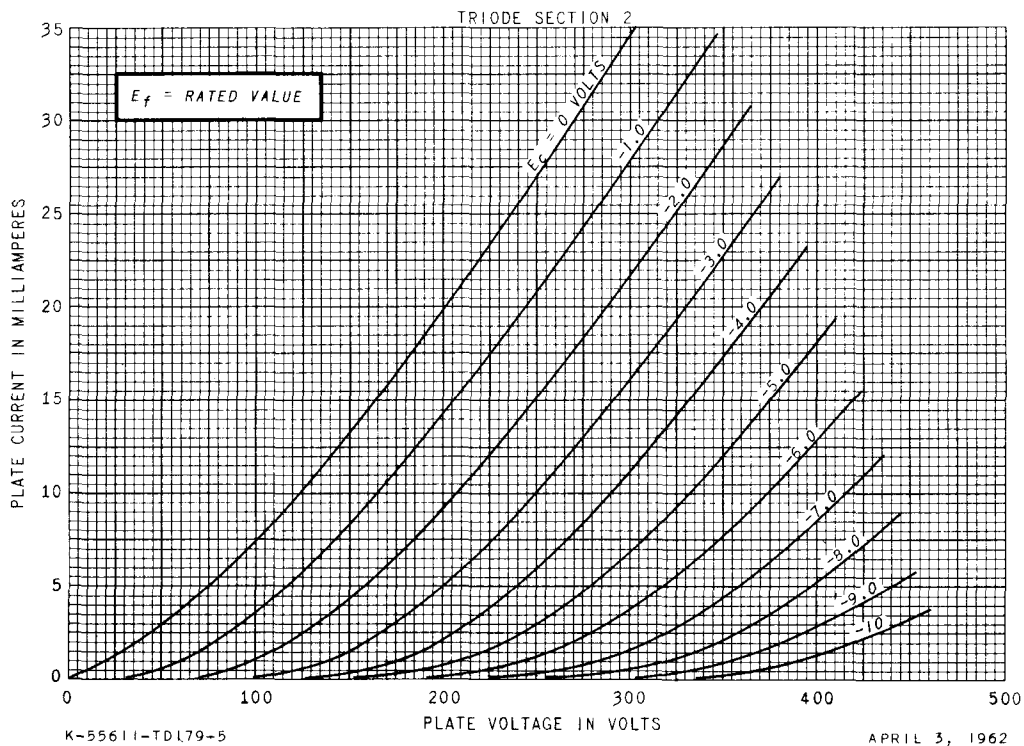
## AVERAGE CHARACTERISTICS



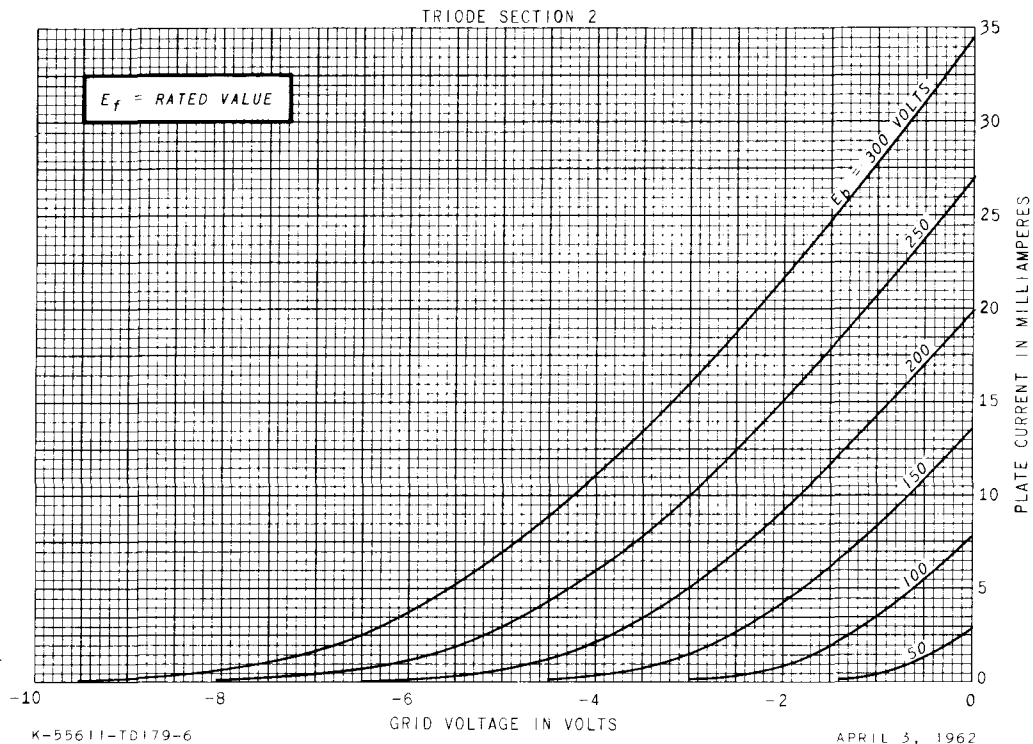
# AVERAGE PLATE CHARACTERISTICS



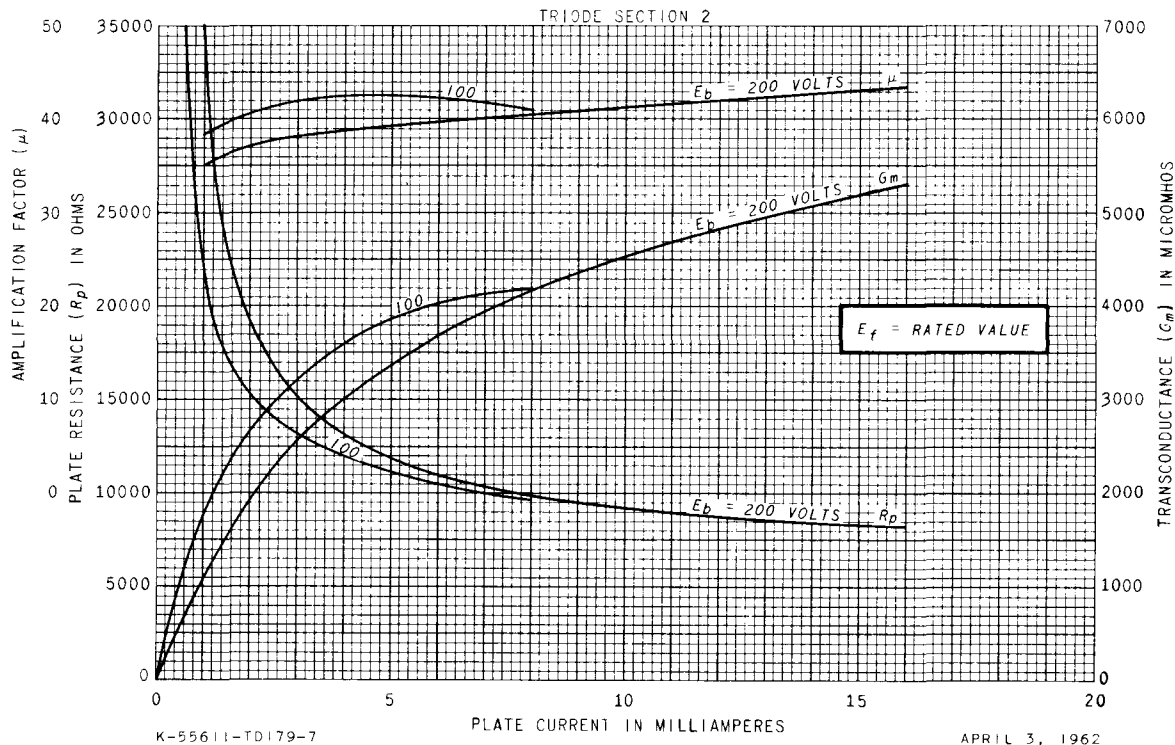
# AVERAGE PLATE CHARACTERISTICS



# AVERAGE TRANSFER CHARACTERISTICS



# AVERAGE CHARACTERISTICS



TUBE DEPARTMENT

**GENERAL  ELECTRIC**

Owensboro, Kentucky