



**ELECTRONIC  
INNOVATIONS**  
IN ACTION

**TUBES**

## —PRODUCT INFORMATION—

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**17AB10**

# Compactron Pentode — Gated-Beam Discriminator

The 17AB10 is a compactron containing a gated-beam discriminator and a beam pentode. The gated-beam discriminator is suitable for FM and TV limiter and discriminator applications, and the beam pentode for audio power output service.

## GENERAL

### ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC\* . . . . 16.8 Volts

Heater Current† . . . . . 0.45±0.03 Amperes

Heater Warm-up Time, Average§ . . . . 11 Seconds

Direct Interelectrode Capacitances¶

#### Gated-Beam Discriminator Section

Grid-Number 1 to Grid-Number 3 . . . . 0.01 pf

Grid-Number 1 to All . . . . . 4.4 pf

Grid-Number 3 to All . . . . . 3.2 pf

#### Pentode Section

Grid-Number 1 to Plate . . . . . 0.22 pf

Input . . . . . 12 pf

Output . . . . . 7.5 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

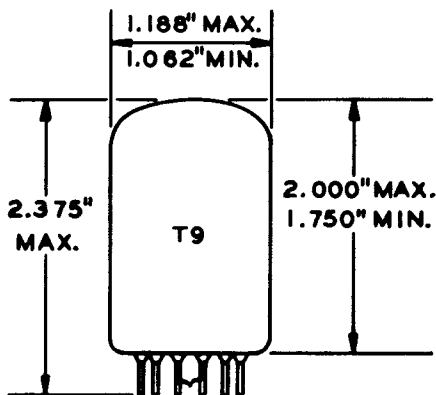
Minimum Diameter . . . . . 1.062 Inches

Maximum Over-all Length . . . . . 2.375 Inches

Maximum Seated Height . . . . . 2.000 Inches

Minimum Seated Height . . . . . 1.750 Inches

### PHYSICAL DIMENSIONS

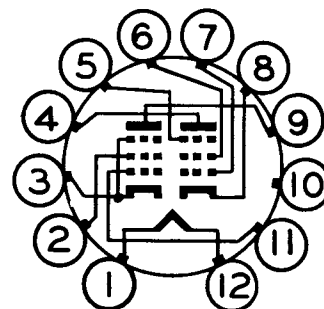


EIA 9-58

### TERMINAL CONNECTIONS

- Pin 1 - Heater
- Pin 2 - Pentode Grid Number 2 (Screen)
- Pin 3 - Pentode Cathode and Beam Plates
- Pin 4 - Gated-Beam Discriminator Plate
- Pin 5 - Gated-Beam Discriminator Grid Number 3 (Quadrature)
- Pin 6 - Gated-Beam Discriminator Grid Number 2 (Accelerator)
- Pin 7 - Gated-Beam Discriminator Grid Number 1
- Pin 8 - Gated-Beam Discriminator Cathode and Internal Shields
- Pin 9 - Pentode Plate
- Pin 10 - No Connection
- Pin 11 - Pentode Grid Number 1
- Pin 12 - Heater

### BASING DIAGRAM



EIA 12BT

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

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

## Gated-Beam Discriminator Section

|                                               |     |              |
|-----------------------------------------------|-----|--------------|
| Plate-Supply Voltage . . . . .                | 330 | Volts        |
| Accelerator-Supply Voltage . . . . .          | 330 | Volts        |
| Peak Positive Grid-Number 1 Voltage . . . . . | 60  | Volts        |
| DC Cathode Current . . . . .                  | 13  | Milliamperes |
| 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        |

## Pentode Section

|                                         |      |              |
|-----------------------------------------|------|--------------|
| Plate Voltage. . . . .                  | 165  | Volts        |
| Screen Voltage . . . . .                | 150  | Volts        |
| Plate Dissipation . . . . .             | 6.5  | Watts        |
| Screen Dissipation . . . . .            | 1.8  | Watts        |
| DC Cathode Current . . . . .            | 65   | Milliamperes |
| 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 . . . . .               | 0.25 | Megohms      |
| With Cathode Bias . . . . .             | 0.5  | 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

## Gated-Beam Discriminator Section

|                                          |      |       |       |              |
|------------------------------------------|------|-------|-------|--------------|
| Plate Voltage. . . . .                   | 135  | 135   | 135   | Volts        |
| Accelerator Voltage. . . . .             | 75   | ---   | ---   | Volts        |
| Accelerator-Supply Voltage . . . . .     | ---  | 280   | 280   | Volts        |
| Accelerator Resistor . . . . .           | ---  | 33000 | 33000 | Ohms         |
| Grid-Number 1 Voltage . . . . .          | 0    | 0     | 0     | Volts        |
| Grid-Number 3 Voltage . . . . .          | +4.0 | +4.0  | 0     | Volts        |
| Plate Current. . . . .                   | ---  | 5.0   | ---   | Milliamperes |
| Accelerator Current. . . . .             | 4.5  | ---   | ---   | Milliamperes |
| Grid-Number 1 Transconductance . . . . . | ---  | ---   | 360   | Micromhos    |
| Grid-Number 3 Transconductance . . . . . | ---  | ---   | 700   | Micromhos    |
| Grid-Number 1 Voltage, approximate       |      |       |       |              |
| Ib = 20 Microamperes . . . . .           | ---  | ---   | -4    | Volts        |
| Grid-Number 3 Voltage, approximate       |      |       |       |              |
| Ib = 20 Microamperes . . . . .           | ---  | ---   | -4    | Volts        |

# CHARACTERISTICS AND TYPICAL OPERATION (Cont'd)

## CLASS A<sub>1</sub> AMPLIFIER

### Pentode Section

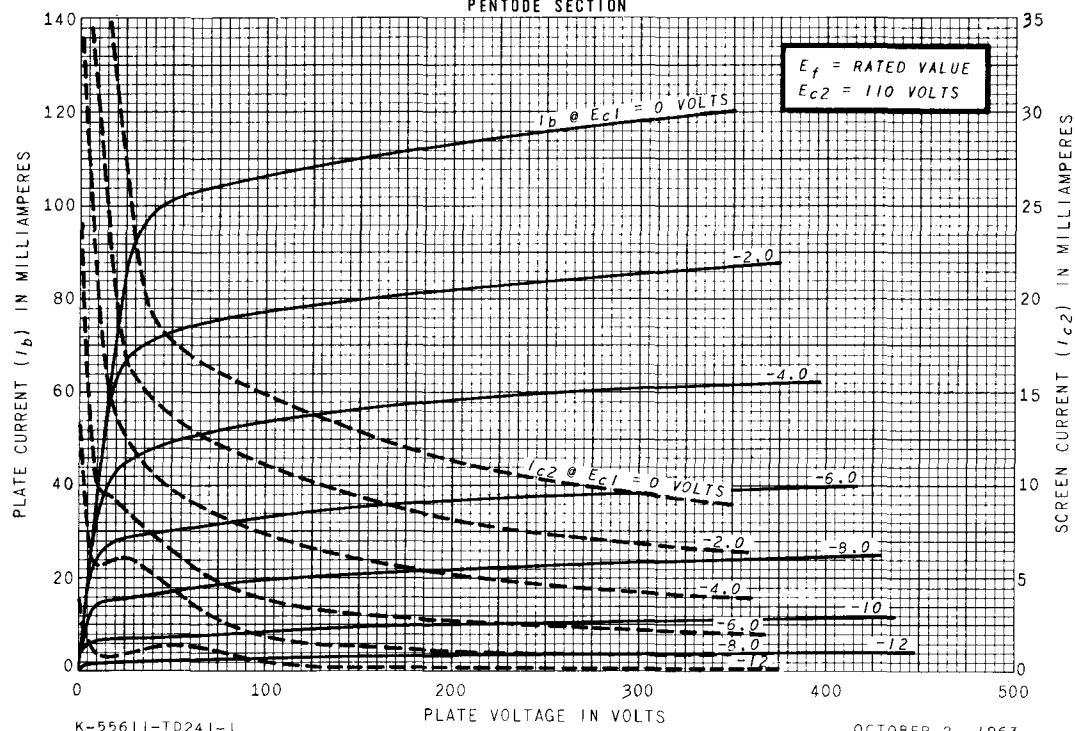
|                                                  |       |              |
|--------------------------------------------------|-------|--------------|
| Plate Voltage. . . . .                           | 145   | Volts        |
| Screen Voltage . . . . .                         | 110   | Volts        |
| Grid-Number 1 Voltage . . . . .                  | -6.0  | Volts        |
| Peak AF Grid-Number 1 Voltage . . . . .          | 6.0   | Volts        |
| Plate Resistance, approximate . . . . .          | 30000 | Ohms         |
| Transconductance. . . . .                        | 8600  | Micromhos    |
| Zero-Signal Plate Current. . . . .               | 36    | Milliamperes |
| Maximum-Signal Plate Current. . . . .            | 40    | Milliamperes |
| Zero-Signal Screen Current . . . . .             | 3.0   | Milliamperes |
| Maximum-Signal Screen Current . . . . .          | 9.0   | Milliamperes |
| Load Resistance . . . . .                        | 3000  | Ohms         |
| Total Harmonic Distortion, approximate . . . . . | 10    | Percent      |
| Maximum-Signal Power Output . . . . .            | 2.4   | Watts        |

## NOTES

- \* Heater voltage for a bogey tube at  $I_f = 0.45$  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.

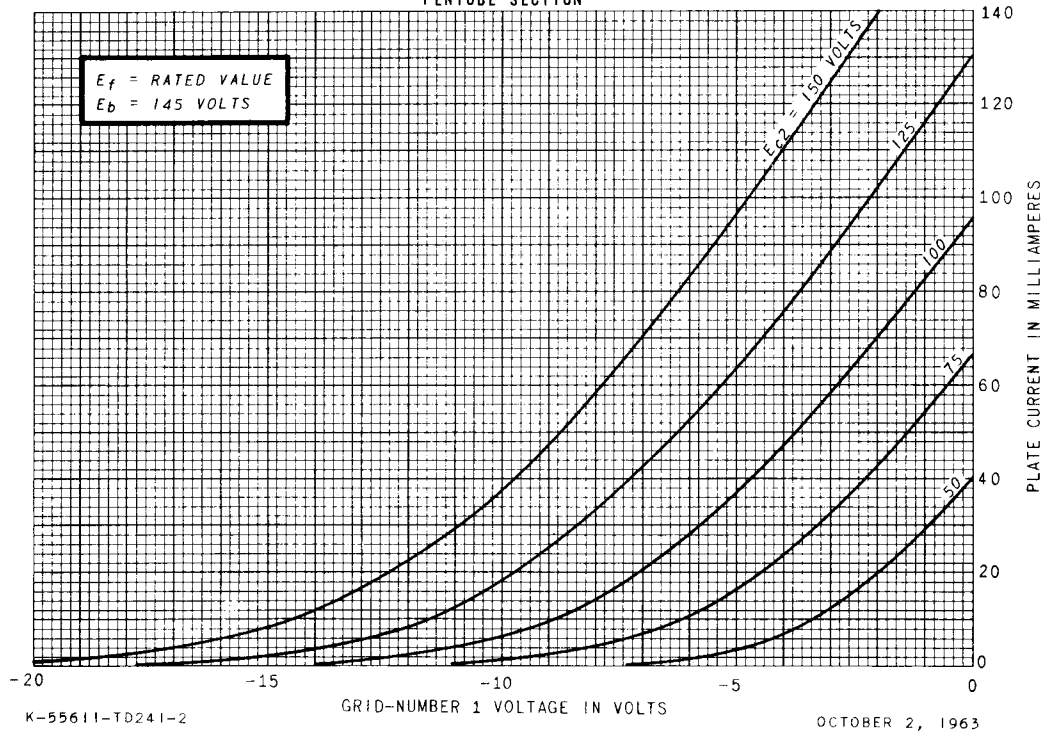
## AVERAGE PLATE CHARACTERISTICS

### PENTODE SECTION



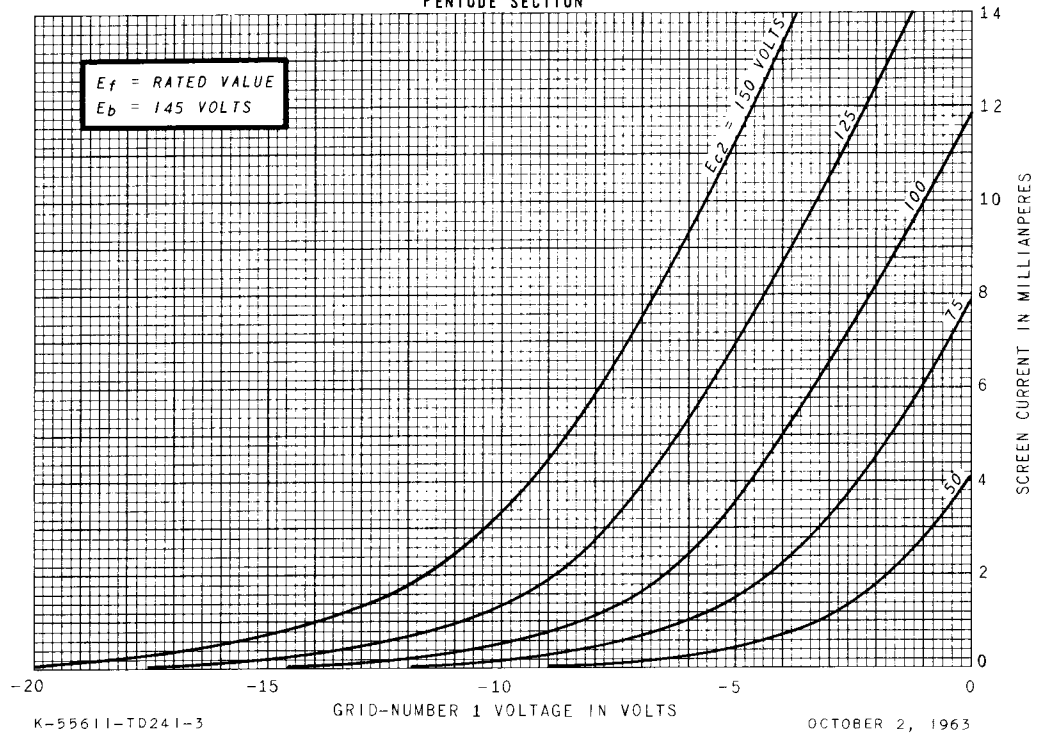
# AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION



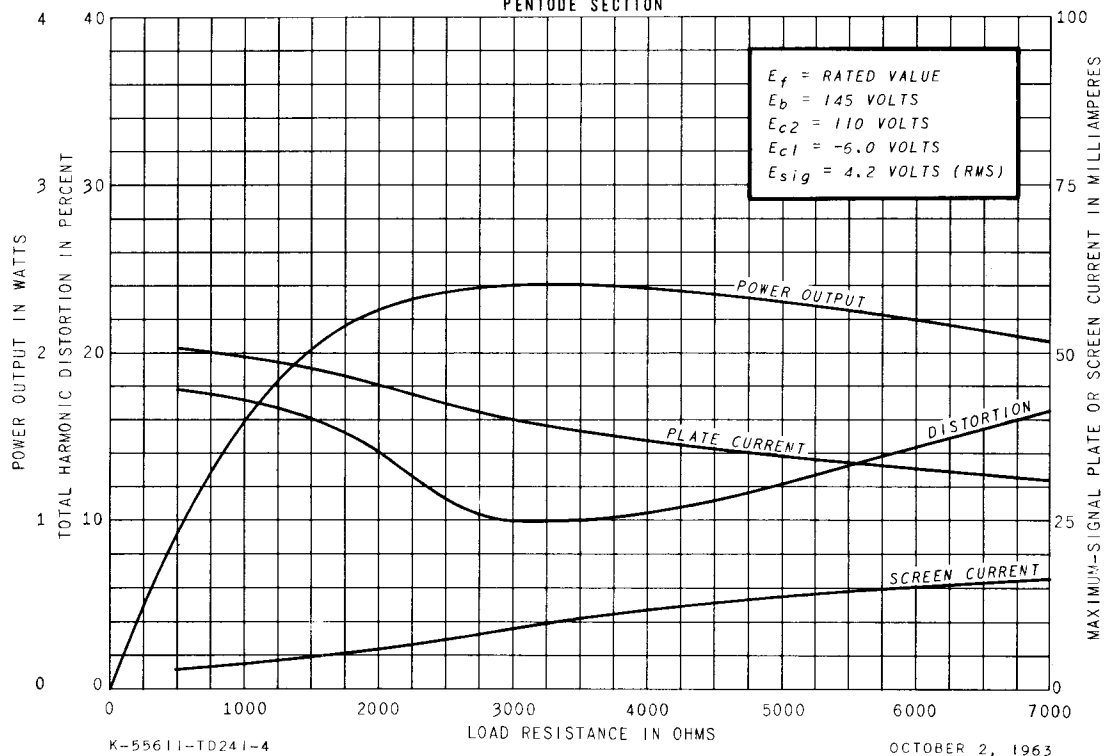
# AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION



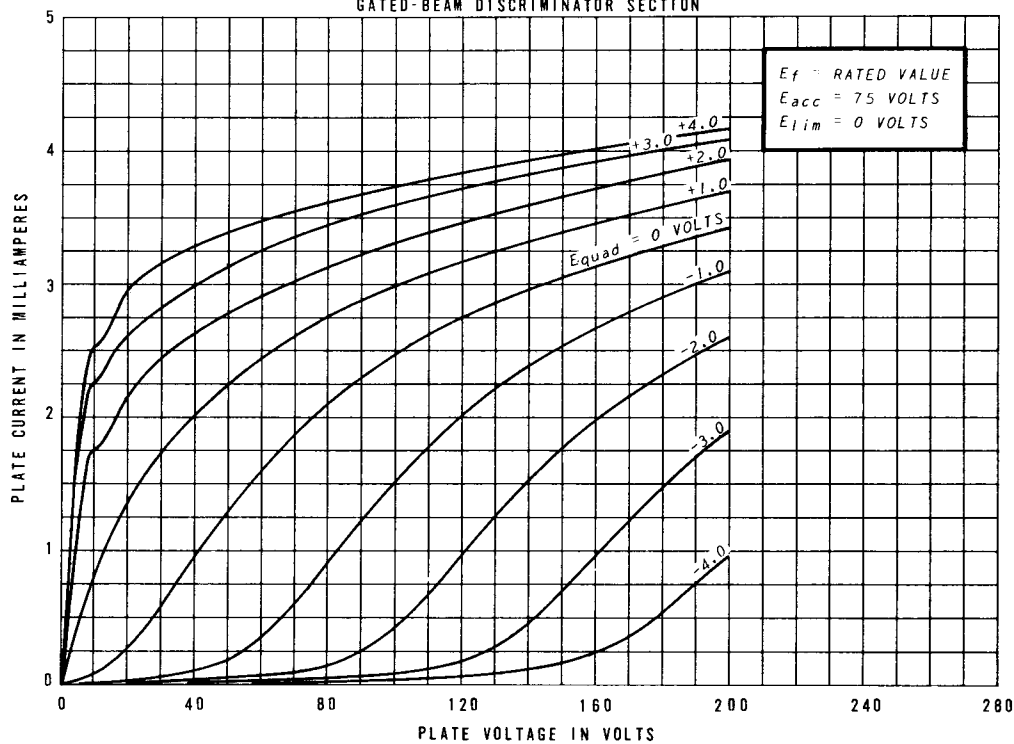
# OPERATION CHARACTERISTICS

## PENTODE SECTION



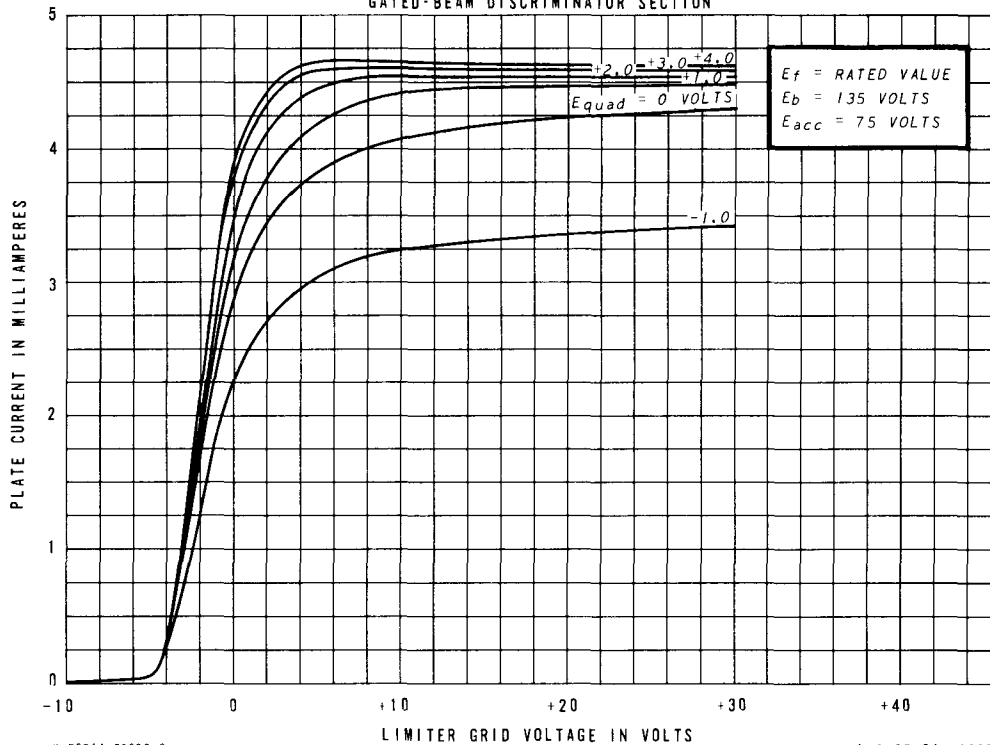
# AVERAGE PLATE CHARACTERISTICS

## GATED-BEAM DISCRIMINATOR SECTION



# AVERAGE TRANSFER CHARACTERISTICS

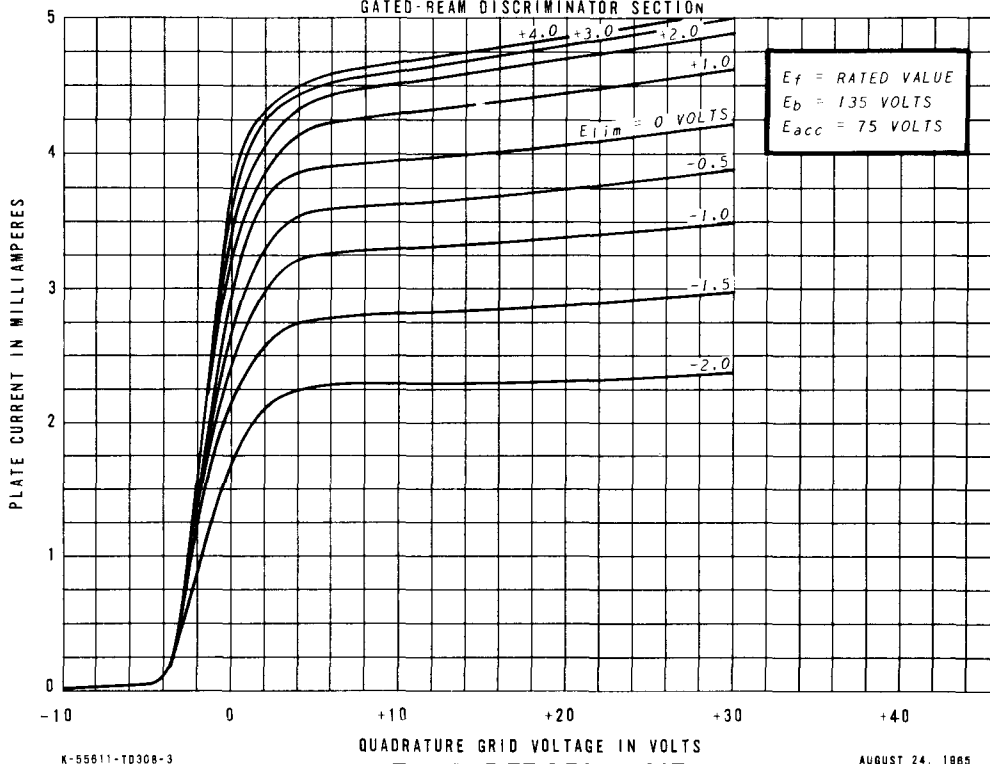
GATED-BEAM DISCRIMINATOR SECTION



AUGUST 24, 1965

# AVERAGE TRANSFER CHARACTERISTICS

GATED-BEAM DISCRIMINATOR SECTION



AUGUST 24, 1965

TUBE DEPARTMENT

GENERAL  ELECTRIC

Owensboro, Kentucky