

4HA7

COMPACTRON DISSIMILAR DOUBLE TRIODE

DESCRIPTION AND RATING

The 4HA7 is a compactron containing a high-mu triode and a medium-mu triode.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC*	4.2	Volts
Heater Current†	0.6±0.04	Amperes
Heater Warm-up Time, Average§	11	Seconds

Direct Interelectrode Capacitances¶

Section 1 Section 2

Grid to Plate: (g to p)	1.4	1.5	pf
Input: g to (h + k + i.s.)	1.9	1.7	pf
Output: p to (h + k + i.s.)	1.9	1.8	pf

MECHANICAL

Operating Position - Any

Envelope - T-9, Glass

Base - E12-70, Button 12-Pin

Outline Drawing - EIA 9-56

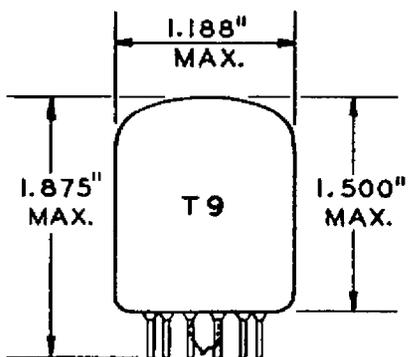
Maximum Diameter	1.188	Inches
Maximum Over-all Length	1.875	Inches
Maximum Seated Height	1.500	Inches

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES

	Section 1	Section 2	
Plate Voltage	330	330	Volts
Positive DC Grid Voltage	0	0	Volts
Negative DC Grid Voltage	50	50	Volts
Plate Dissipation	2.75	0.3	Watts
DC Cathode Current	20	---	Milliamperes
Heater-Cathode Voltage			
Heater Positive with Respect to Cathode			
DC Component	100	100	Volts
Total DC and Peak	200	200	Volts
Heater Negative with Respect to Cathode			
Total DC and Peak	200	200	Volts

PHYSICAL DIMENSIONS

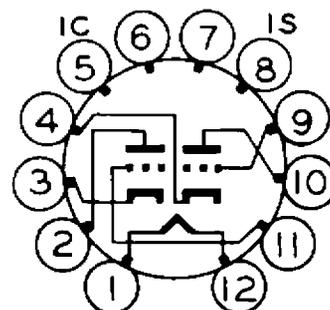


EIA 9-56

TERMINAL CONNECTIONS

- Pin 1 - Heater
- Pin 2 - Plate (Section 2)
- Pin 3 - Cathode (Section 2)
- Pin 4 - Cathode (Section 1)
- Pin 5 - Internal Connection - Do Not Use
- Pin 6 - No Connection
- Pin 7 - No Connection
- Pin 8 - Internal Shield
- Pin 9 - Grid (Section 1)
- Pin 10 - Plate (Section 1)
- Pin 11 - Grid (Section 2)
- Pin 12 - Heater

BASING DIAGRAM



EIA 12FQ

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 (Cont'd)

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

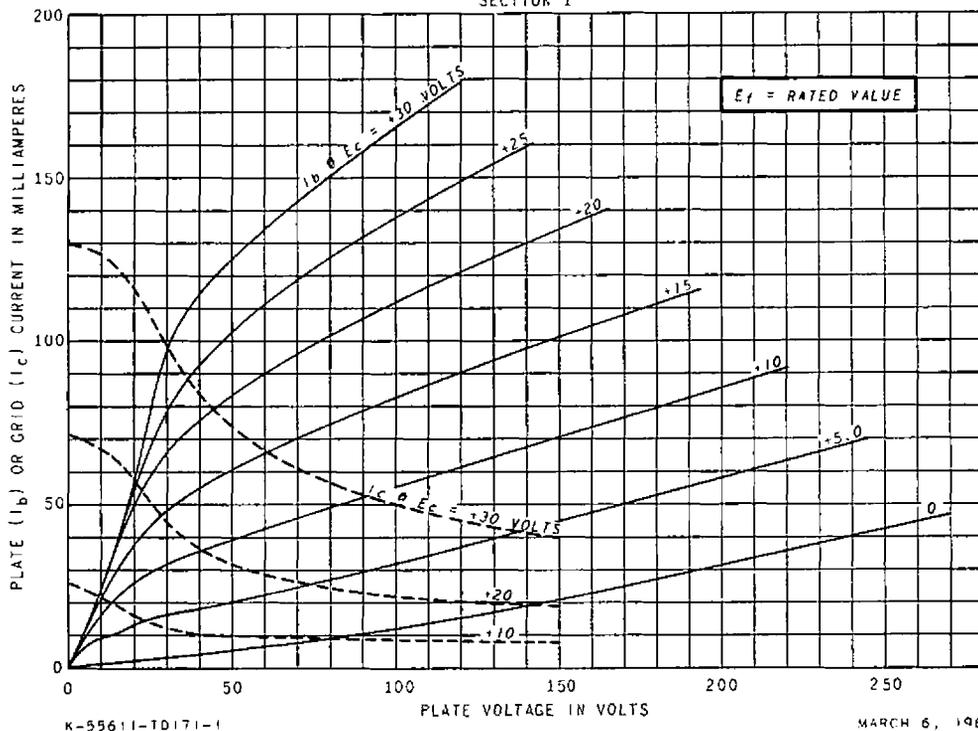
	Section 1	Section 2	
Plate Voltage	250	250	Volts
Grid Voltage	-8.5	-2.0	Volts
Amplification Factor	17	100	
Plate Resistance, approximate.	7700	62500	Ohms
Transconductance	2200	1600	Micromhos
Plate Current	10.5	1.2	Milliamperes
Grid Voltage, approximate I _b = 10 Microamperes.	-24	---	Volts

NOTES

- * Heater voltage for a bogey tube at I_f = 0.6 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.

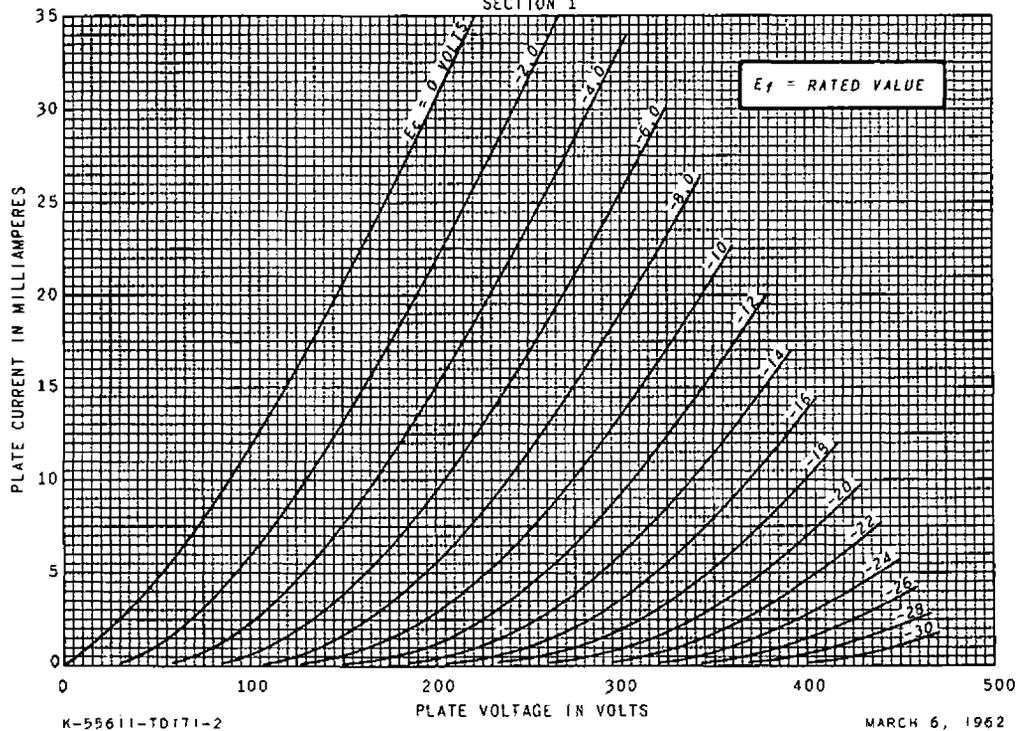
AVERAGE PLATE CHARACTERISTICS

SECTION 1



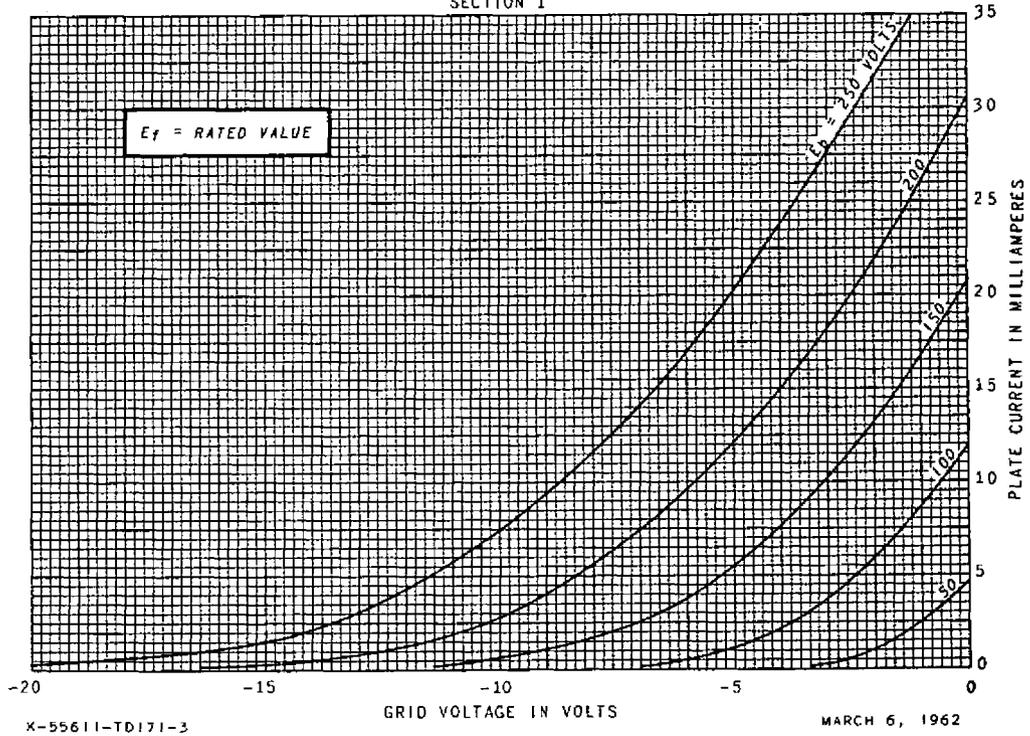
AVERAGE PLATE CHARACTERISTICS

SECTION 1



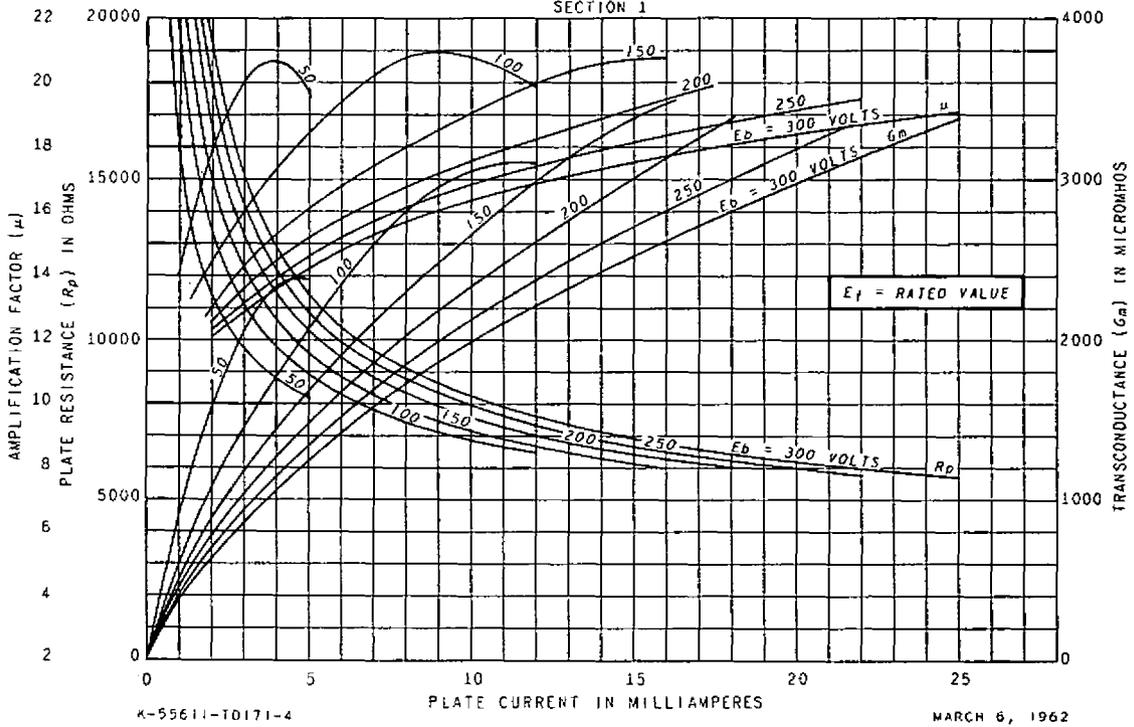
AVERAGE TRANSFER CHARACTERISTICS

SECTION 1



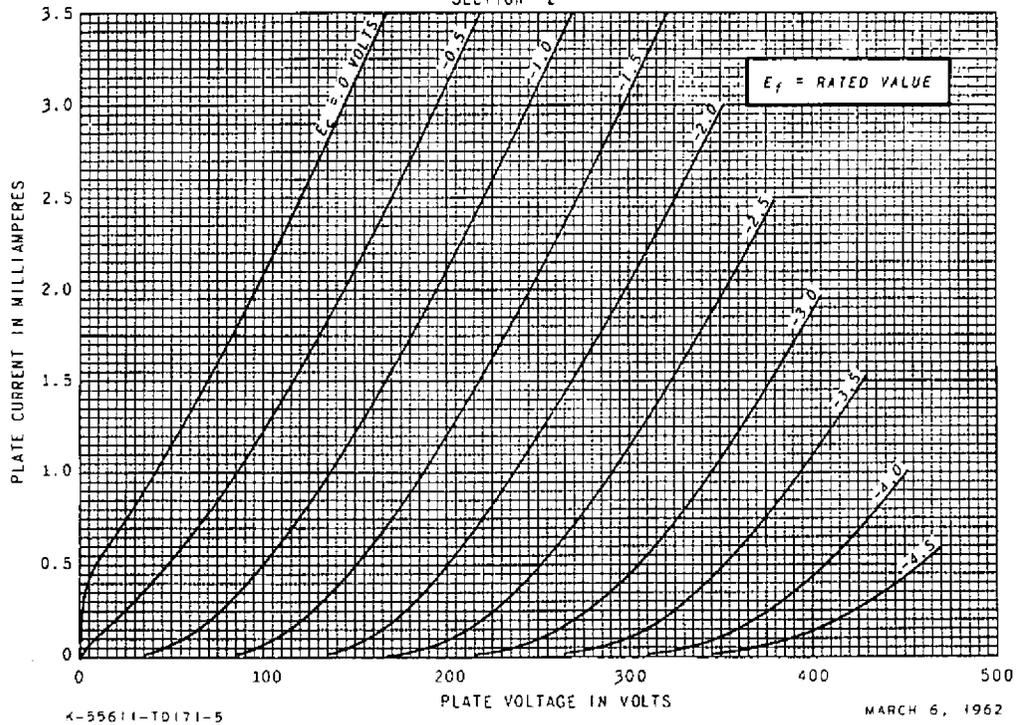
AVERAGE CHARACTERISTICS

SECTION 1



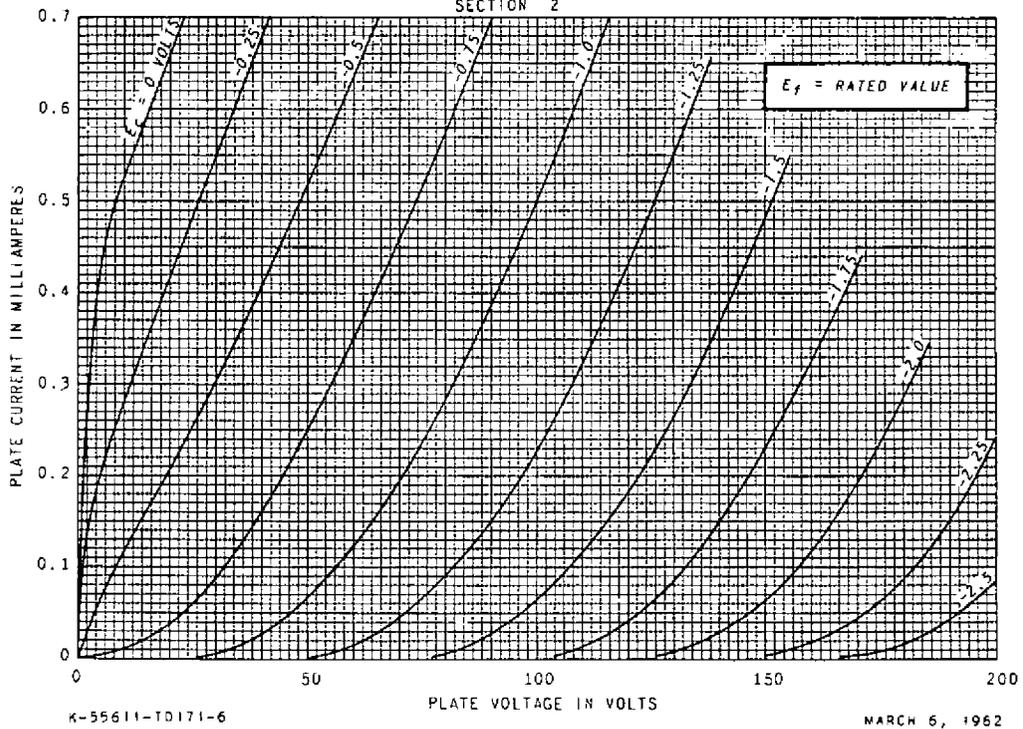
AVERAGE PLATE CHARACTERISTICS

SECTION 2

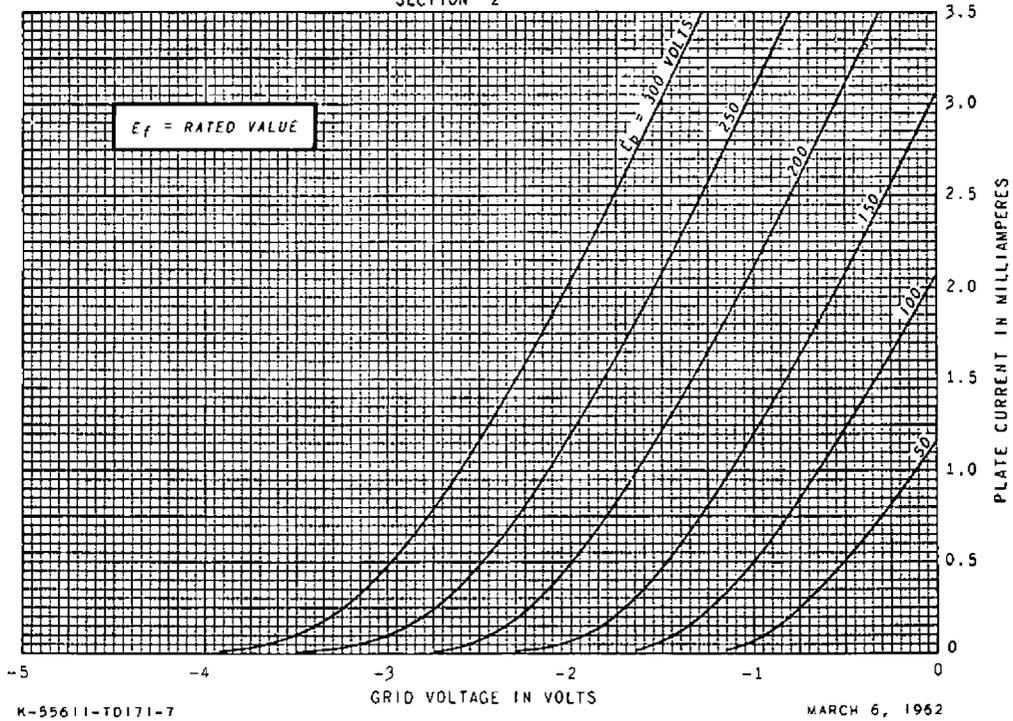


AVERAGE PLATE CHARACTERISTICS

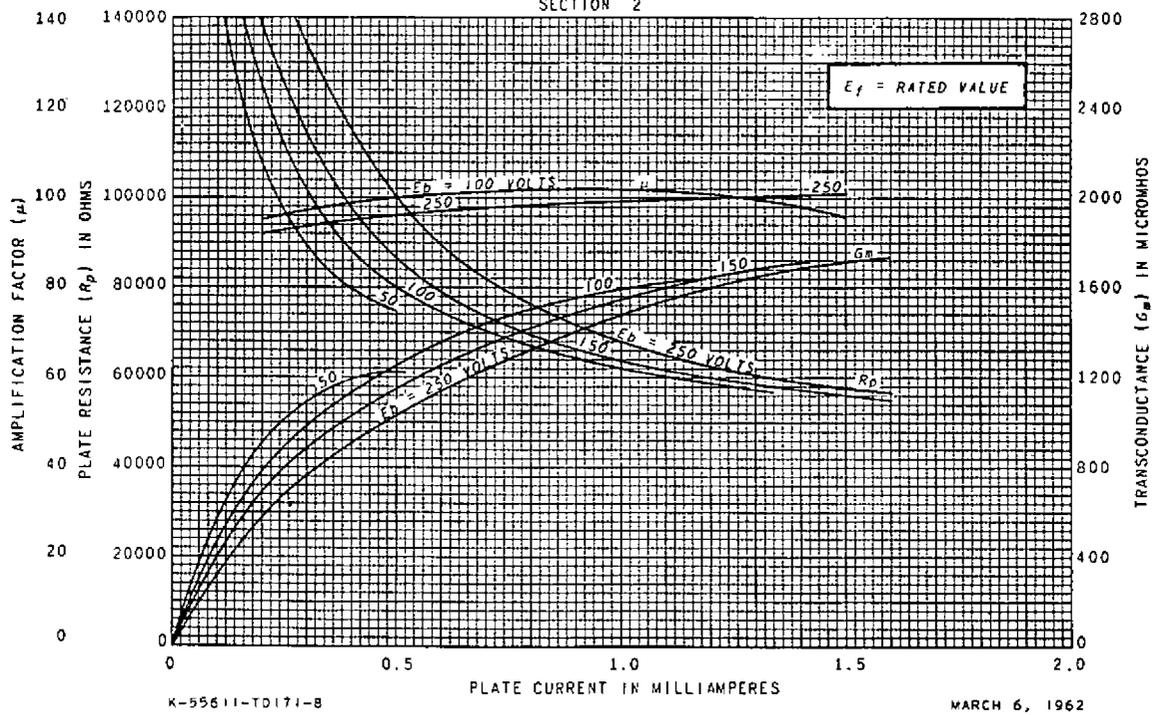
SECTION 2



AVERAGE TRANSFER CHARACTERISTICS
SECTION 2



AVERAGE CHARACTERISTICS
SECTION 2



TUBE DEPARTMENT



Owensboro, Kentucky