ELECTRONICS

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

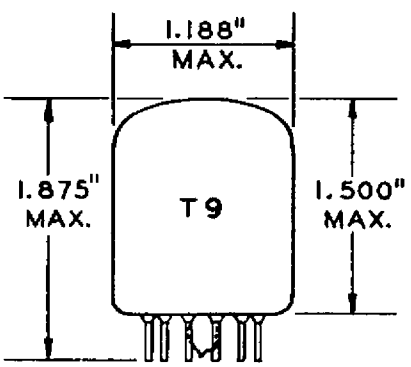
Maximum Diameter	1.188	Inches
Maximum Over-all Length	1.875	Inches
Maximum Seated Height	1.500	Inches

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

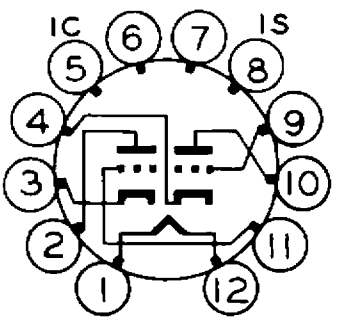


EIA 9-56

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

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GENERAL ELECTRIC

from JEDEC release #4449, Oct. 7, 1963

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 Ib = 10 Microamperes	-24	---	Volts

NOTES

* Heater voltage for a bogey tube at If = 0.6 amperes.

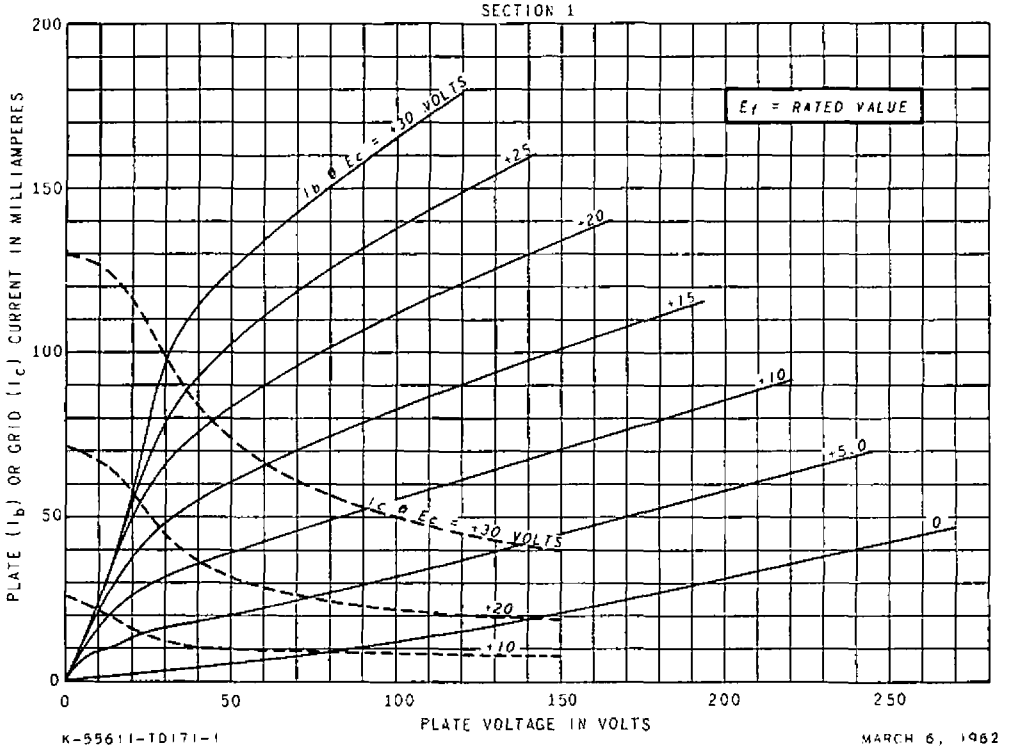
‡ The equipment designer should design the equipment so that heater current is centered at the specified bogey value, with heater supply variations restricted to maintain heater current within the sepcified tolerance.

§ 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

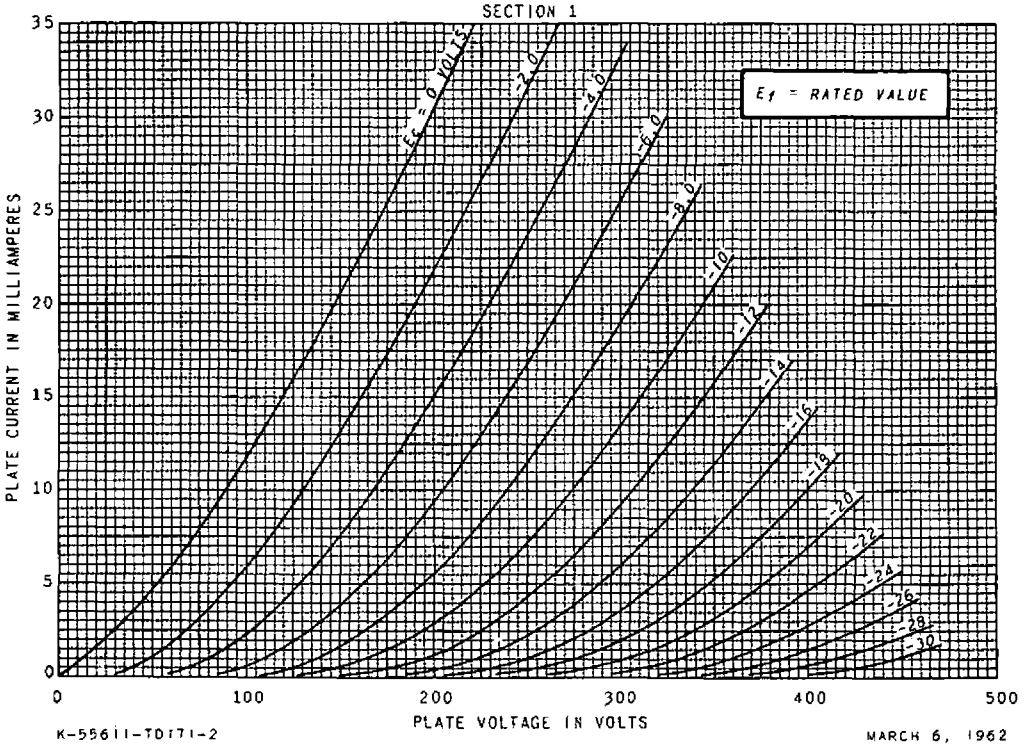
SECTION 1



K-55611-TD171-1 MARCH 6, 1962

AVERAGE PLATE CHARACTERISTICS

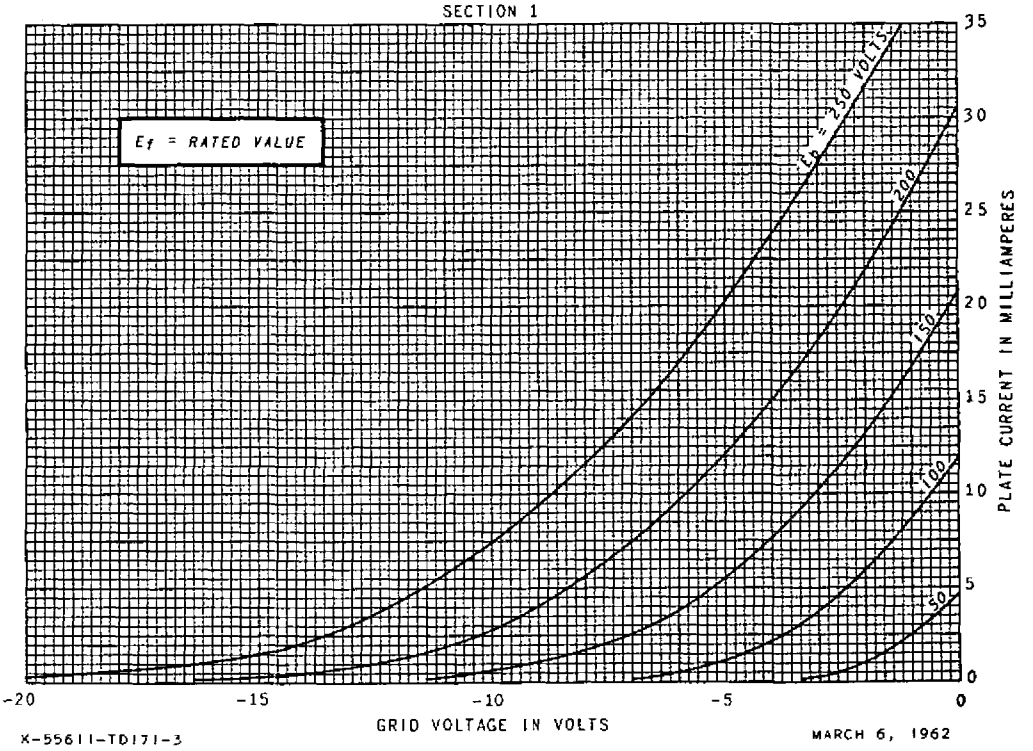
SECTION 1



K-55611-TD171-2 MARCH 6, 1962

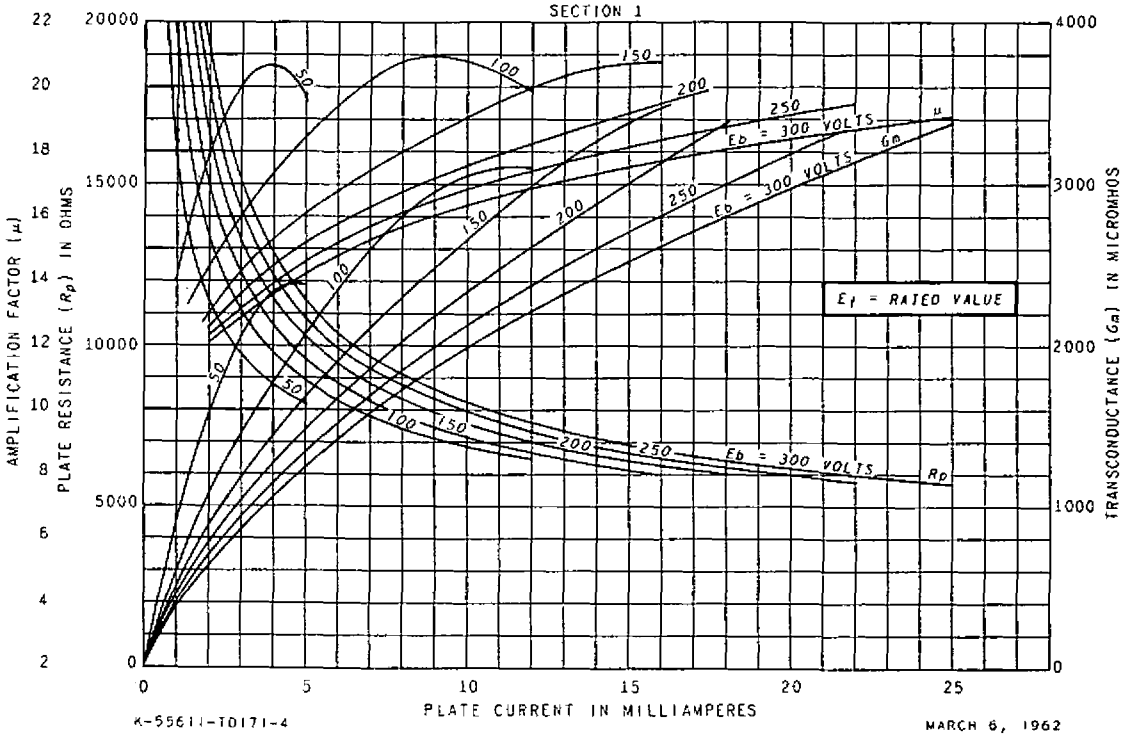
AVERAGE TRANSFER CHARACTERISTICS

SECTION 1



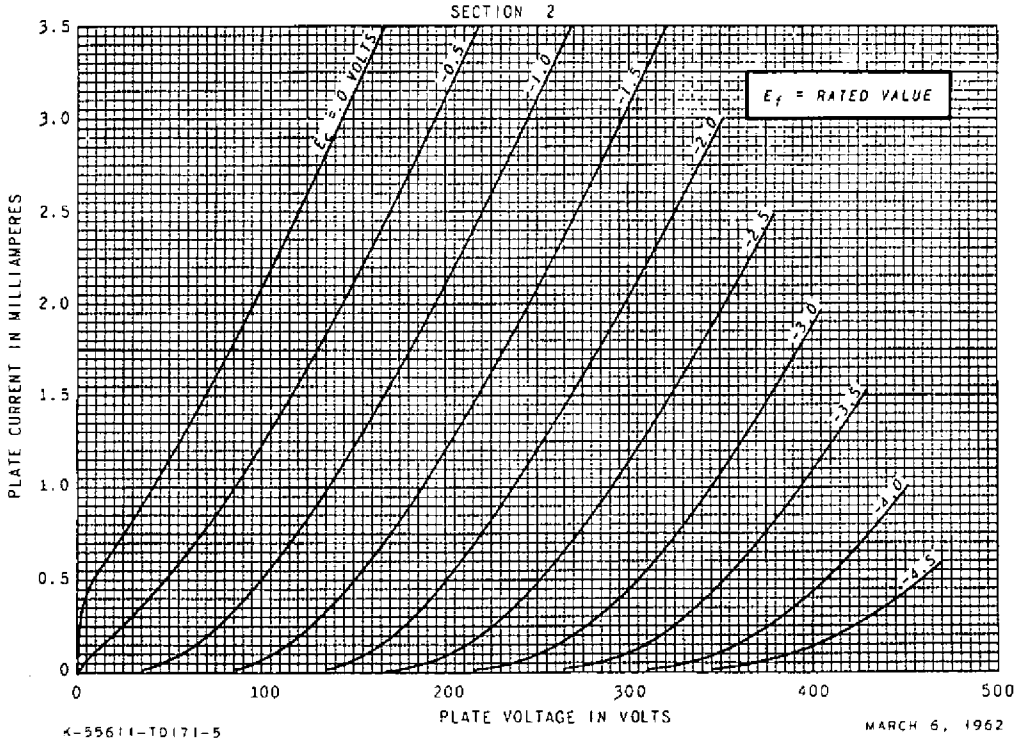
AVERAGE CHARACTERISTICS

SECTION 1



AVERAGE PLATE CHARACTERISTICS

SECTION 2

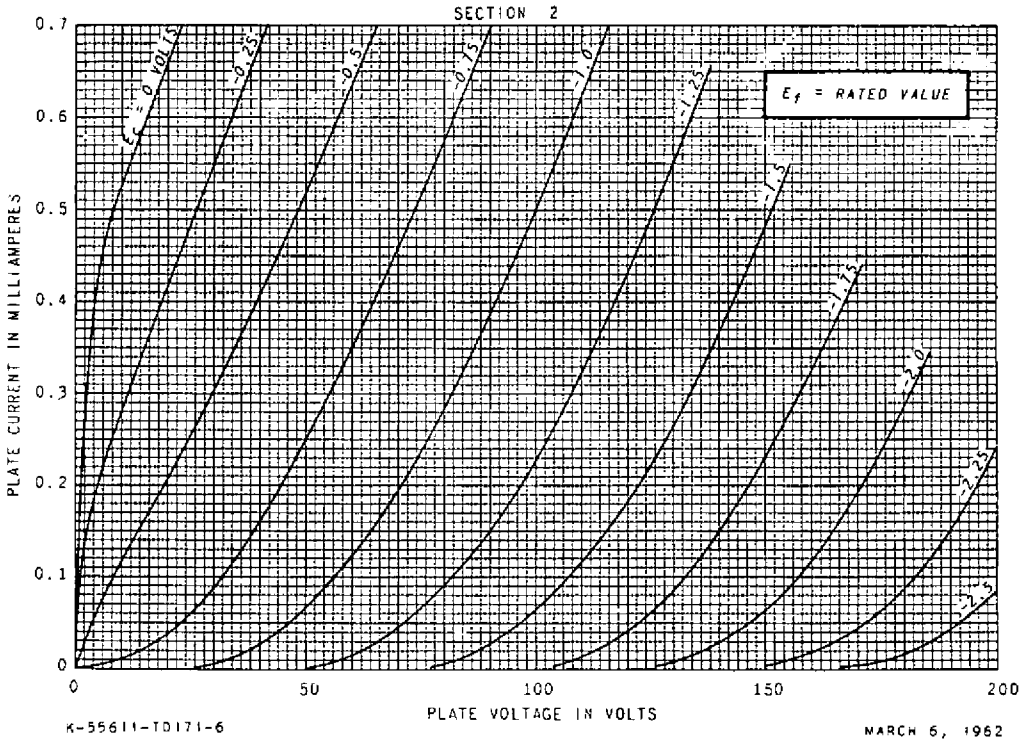


K-55611-TD171-5

MARCH 6, 1962

AVERAGE PLATE CHARACTERISTICS

SECTION 2

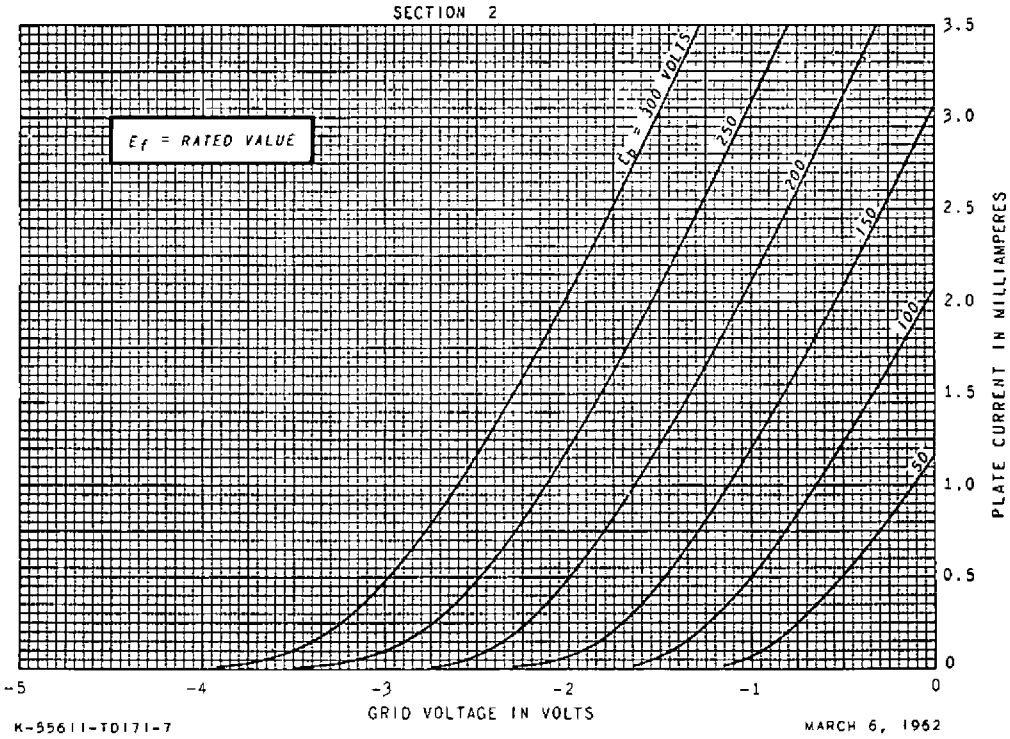


K-55611-TD171-6

MARCH 6, 1962

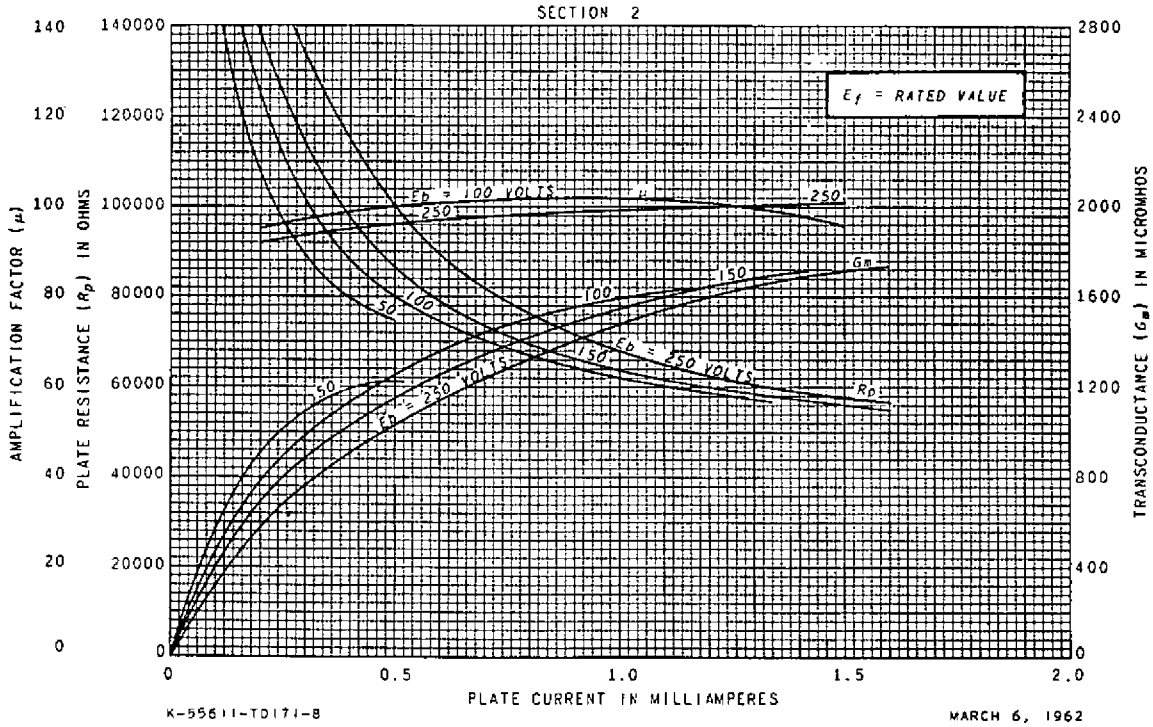
AVERAGE TRANSFER CHARACTERISTICS

SECTION 2



AVERAGE CHARACTERISTICS

SECTION 2



TUBE DEPARTMENT

GENERAL ELECTRIC

Owensboro, Kentucky