Compactron Dissimilar Double Pentode

18AJ10

- **LOW HEATER POWER**
- **140 VOLTS B+**
- **HIGH SENSITIVITY SOUND DETECTOR**

The 18AJ10 is a compactron containing a sharp-cutoff, dual-control pentode (Section 2) and a power pentode (Section 1). The dual-control pentode is intended for use as an FM detector and the power pentode as an audio-frequency output amplifier in television receivers.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC*	18	Volts
Heater Current†	0.315 ± 0.02	Amperes
Heater Warm-up Time, average‡	11	Seconds

Direct Interelectrode Capacitances, approximate§

Section 1

Grid-Number 1 to Plate: (1g1 to 1p)	0.24	pf
Input: 1g1 to (h + 1k + 1g2 + b.p. + 2k + i.s.)	9.5	pf
Output: 1p to (h + 1k + 1g2 + b.p. + 2k + i.s.)	10	pf

Section 2

Grid-Number 1 to Plate: (2g1 to 2p)	0.036	pf
Grid-Number 3 to Plate: (2g3 to 2p)	3.0	pf
Grid-Number 1 to All Except Plate: 2g1 to (h + 2k + 2g2 + 2g3 + i.s.)	7.0	pf
Grid-Number 3 to All: 2g3 to (h + 2k + 2g1 + 2g2 + 2p + i.s.)	7.8	pf
Grid-Number 1 to Grid-Number 3: (2g1 to 2g3)	0.14	pf

Coupling

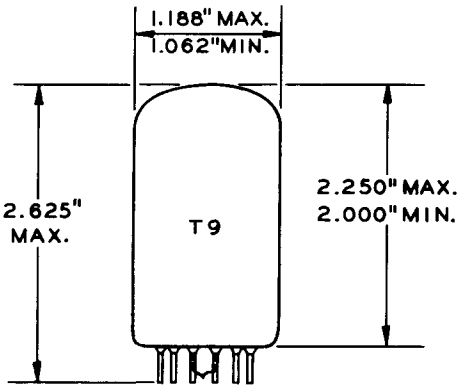
Plate, Section 1 to Plate, Section 2: (1p to 2p)	0.17	pf

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

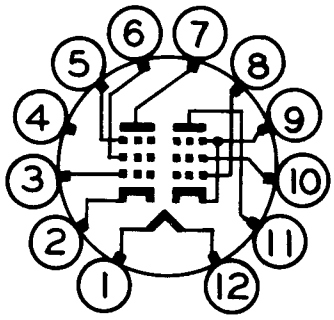


EIA 9-59

TERMINAL CONNECTIONS

Pin 1 - Heater
Pin 2 - Cathode (Section 2) and Internal Shield
Pin 3 - Grid Number 1 (Section 2)
Pin 4 - No Connection
Pin 5 - Grid Number 3 (Suppressor)(Section 2)
Pin 6 - Grid Number 2 (Screen)(Section 2)
Pin 7 - Plate (Section 2)
Pin 8 - Grid Number 1 (Section 1)
Pin 9 - Cathode and Beam Plates (Section 1)
Pin 10 - Grid Number 2 (Screen)(Section 1)
Pin 11 - Plate (Section 1)
Pin 12 - Heater

BASING DIAGRAM



EIA 12EZ

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MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES

Section 1

Plate Voltage	165	Volts
Screen Voltage	150	Volts
Plate Dissipation	6.0	Watts
Screen Dissipation	1.25	Watts
DC Cathode Current	60	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 Cathode Bias	1.0	Megohms

Section 2

Plate Voltage	300	Volts
Suppressor Voltage		
Positive (DC + Peak)	25	Volts
Negative (DC + Peak)	100	Volts
Screen Supply Voltage	300	Volts
Screen Voltage - See Screen Rating Chart		
Positive DC Grid-Number 1 Voltage	0	Volts
Negative DC Grid-Number 1 Voltage	50	Volts
Plate Dissipation	1.7	Watts
Suppressor Dissipation	0.1	Watts
Screen Dissipation	1.0	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
Suppressor Circuit Resistance	0.5	Megohms
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—CLASS A_1 AMPLIFIER

Section 1

Plate Voltage	145	Volts
Screen Voltage	110	Volts
Grid-Number 1 Voltage	-7.0	Volts
Peak AF Grid-Number 1 Voltage	7.0	Volts
Plate Resistance, approximate	33000	Ohms
Transconductance	5600	Micromhos
Zero-Signal Plate Current	34	Milliamperes
Maximum-Signal Plate Current	39	Milliamperes
Zero-Signal Screen Current	6.5	Milliamperes
Maximum-Signal Screen Current	9.3	Milliamperes
Load Resistance	2500	Ohms
Total Harmonic Distortion, approximate	12	Percent
Maximum-Signal Power Output	1.45	Watts

AVERAGE CHARACTERISTICS

Section 2

Plate Voltage	150	Volts
Suppressor Voltage	0	Volts
Screen Voltage	100	Volts
Cathode-Bias Resistor	180	Ohms
Plate Resistance, approximate	0.18	Megohms
Grid-Number 1 Transconductance	2400	Micromhos
Grid-Number 3 Transconductance	750	Micromhos
Plate Current	2.8	Milliamperes
Screen Current	3.5	Milliamperes
Grid-Number 1 Voltage, approximate Ib = 20 Microamperes	-4	Volts
Grid-Number 3 Voltage, approximate Ib = 50 Microamperes	-3.5	Volts

NOTES

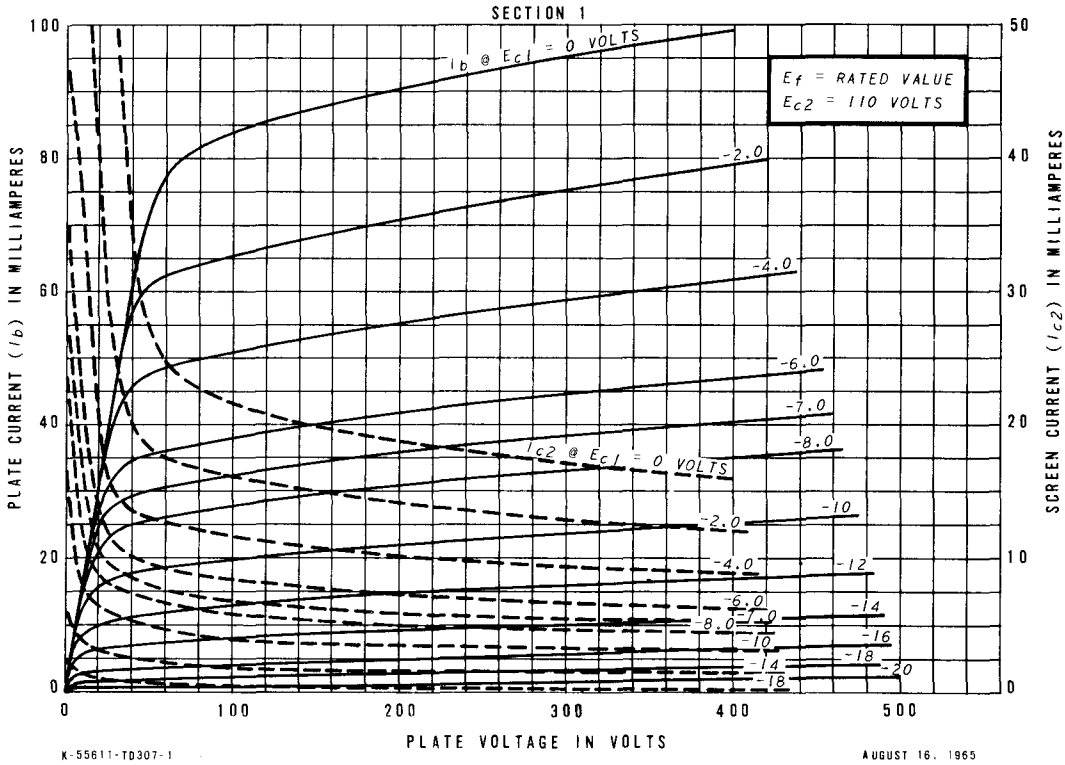
* Heater voltage for a bogey tube at If = 0.315 amperes.

† 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.

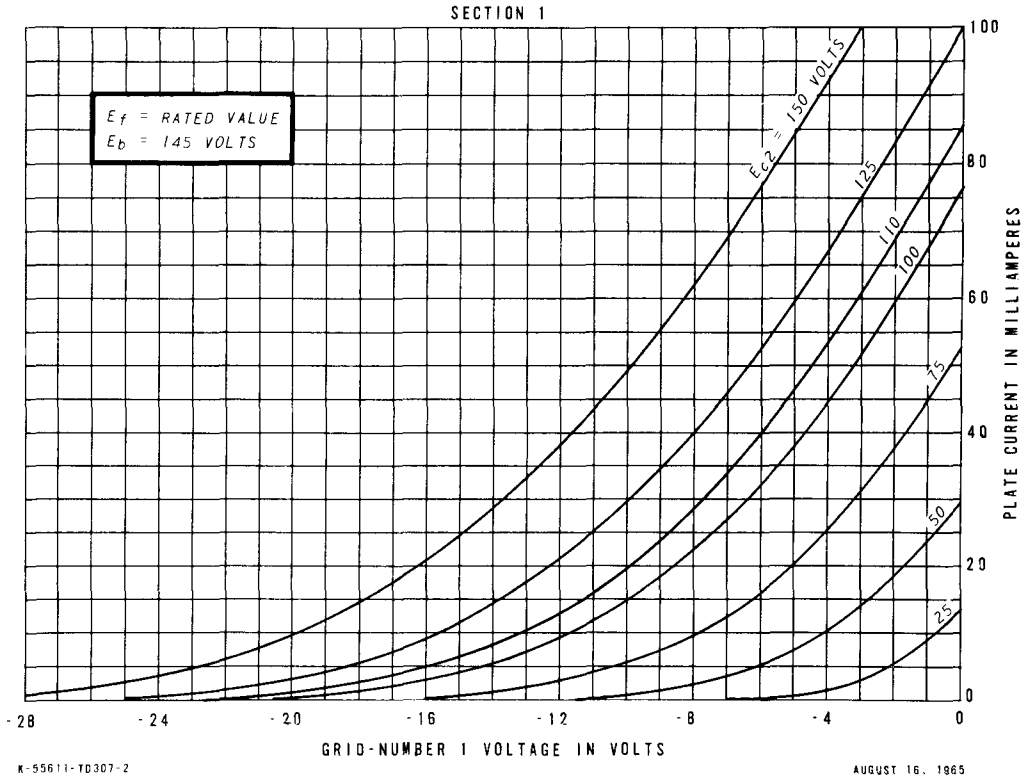
‡ The time required for the voltage across the heater to reach 80 percent of the bogey value after applying 4 times the bogey heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the bogey heater voltage divided by the bogey heater current.

§ Without external shield.

AVERAGE PLATE CHARACTERISTICS

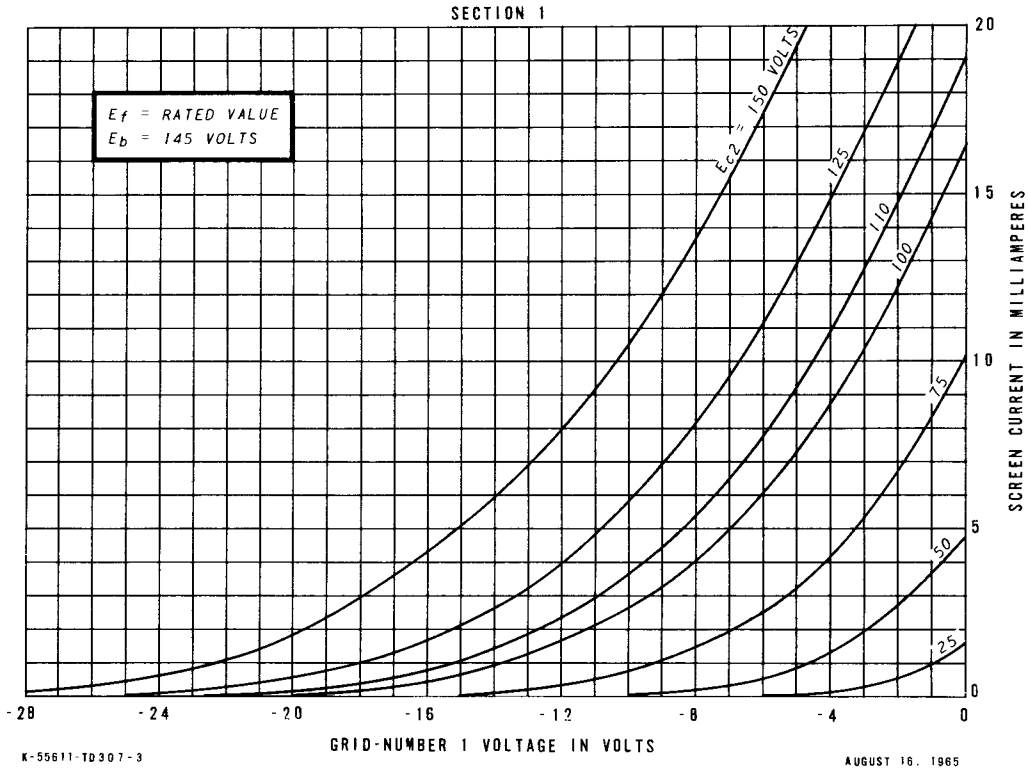


AVERAGE TRANSFER CHARACTERISTICS



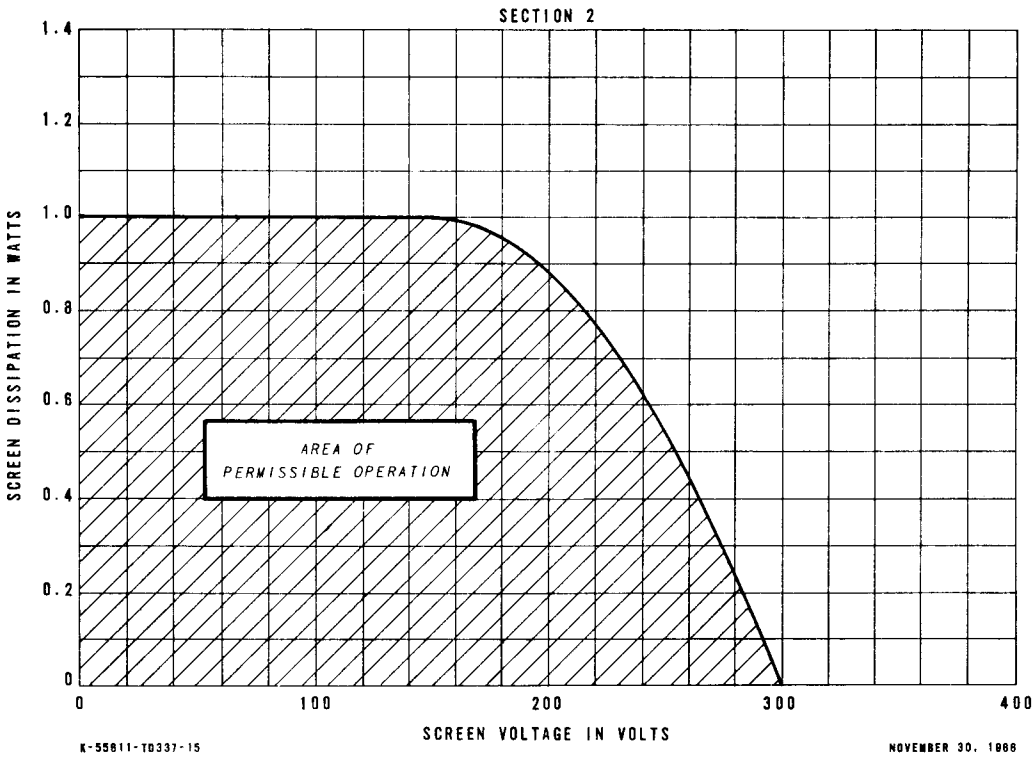
AVERAGE TRANSFER CHARACTERISTICS

SECTION 1



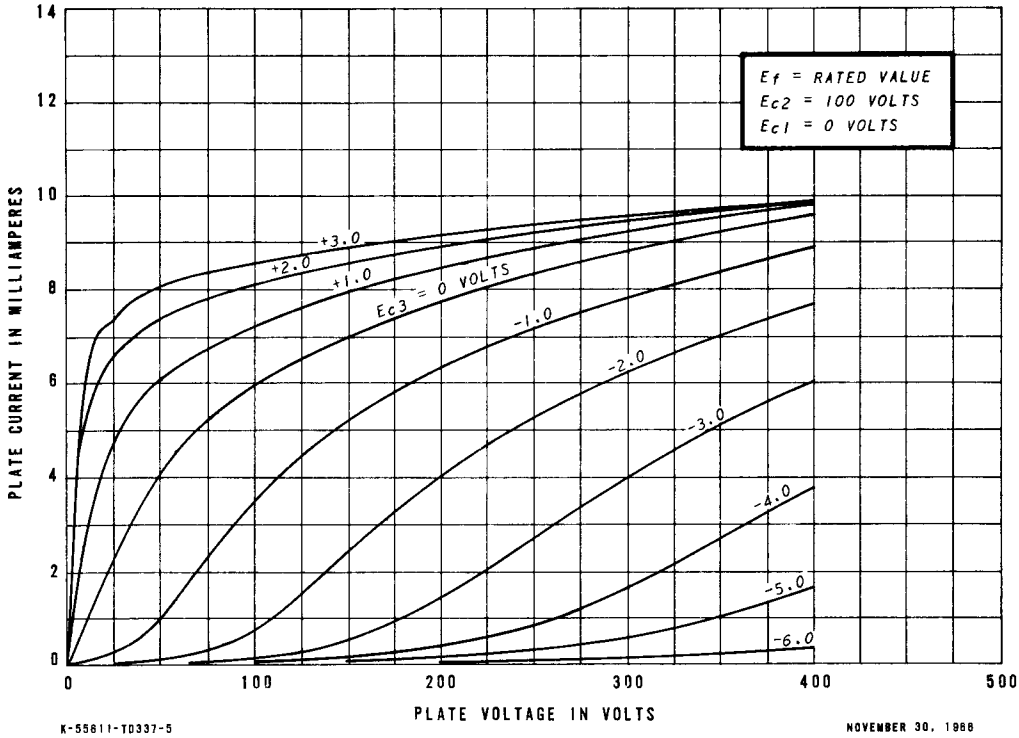
SCREEN RATING CHART

SECTION 2



AVERAGE PLATE CHARACTERISTICS

SECTION 2



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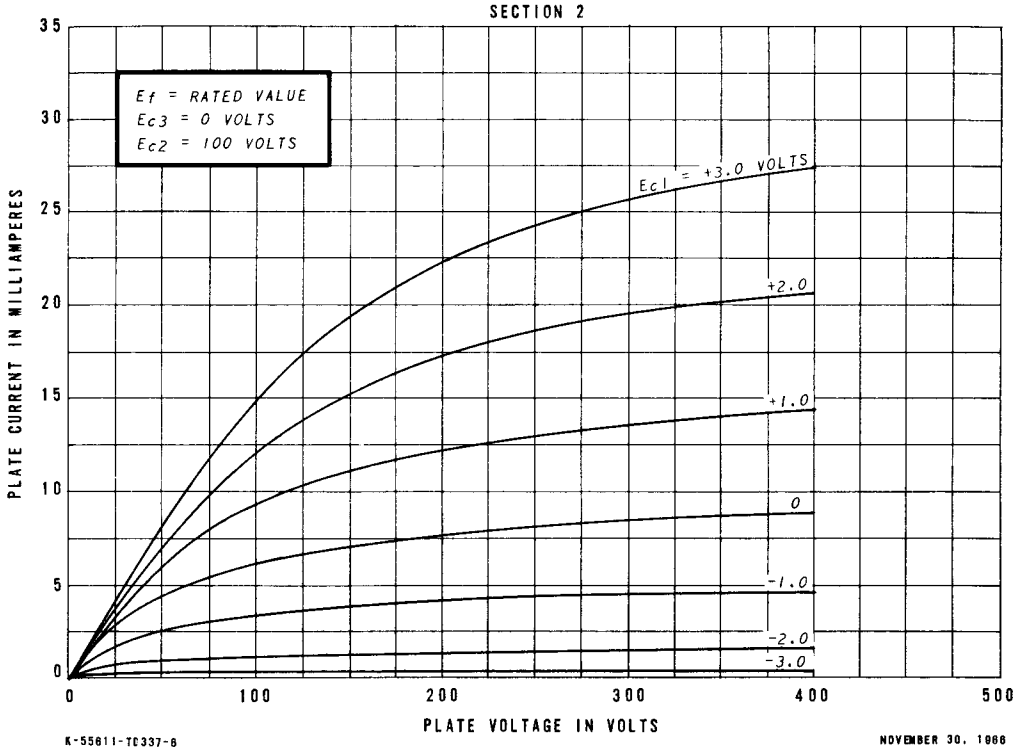
AVERAGE PLATE CHARACTERISTICS

SECTION 2



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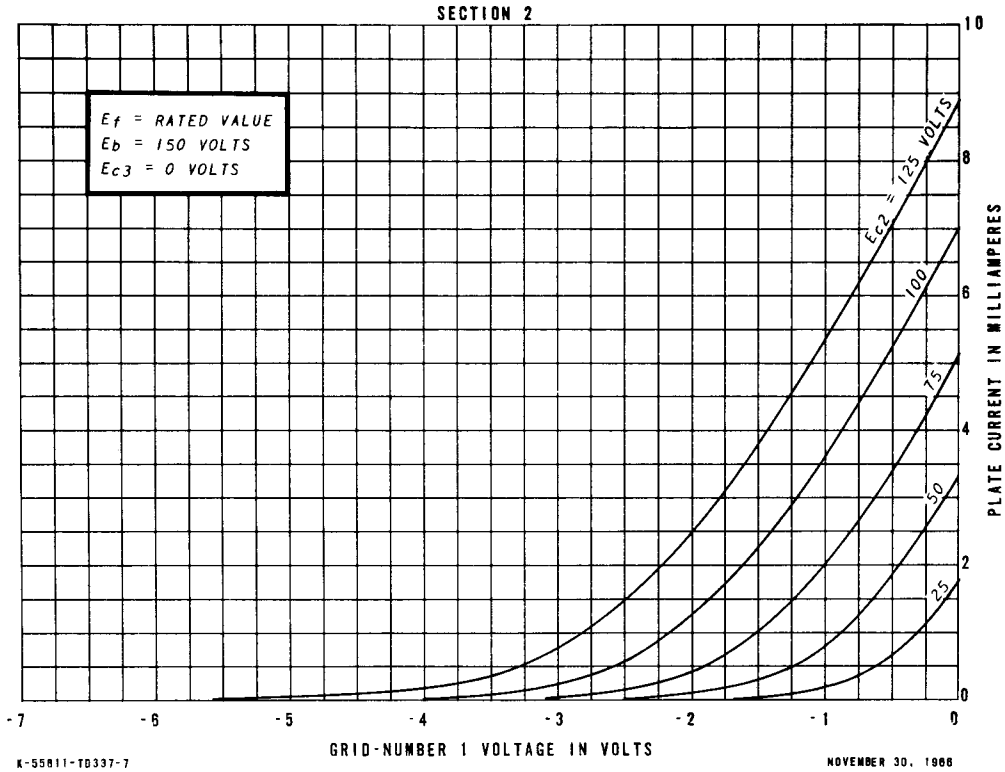
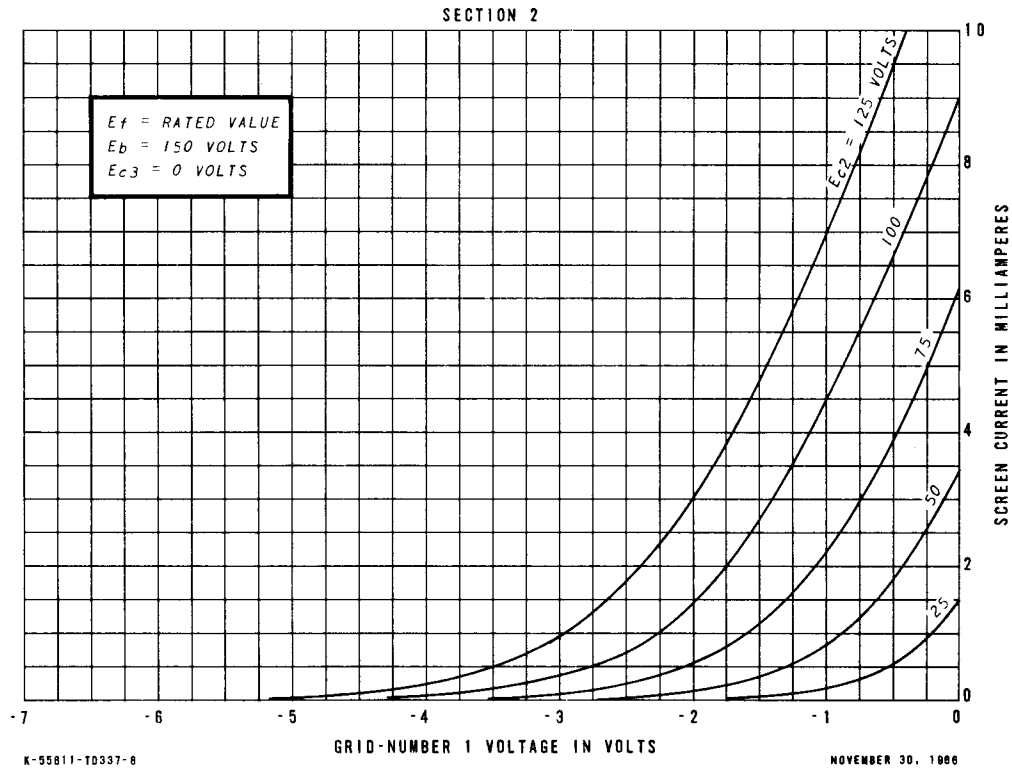
AVERAGE TRANSFER CHARACTERISTICS

SECTION 2



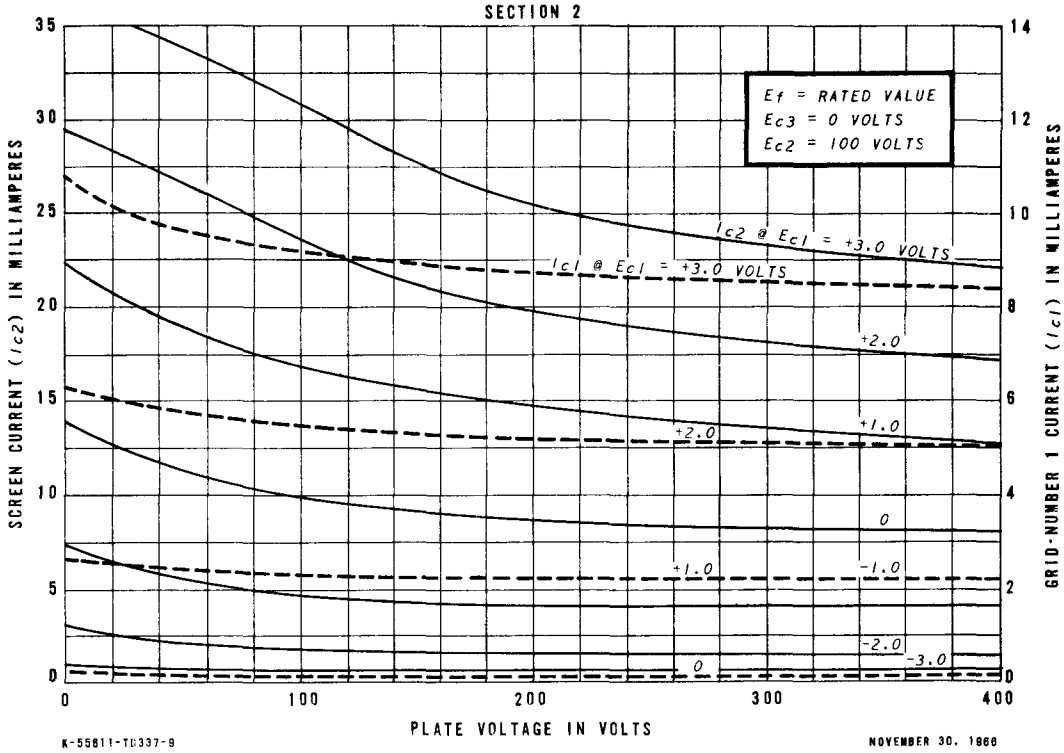
AVERAGE TRANSFER CHARACTERISTICS

SECTION 2



AVERAGE CHARACTERISTICS

SECTION 2



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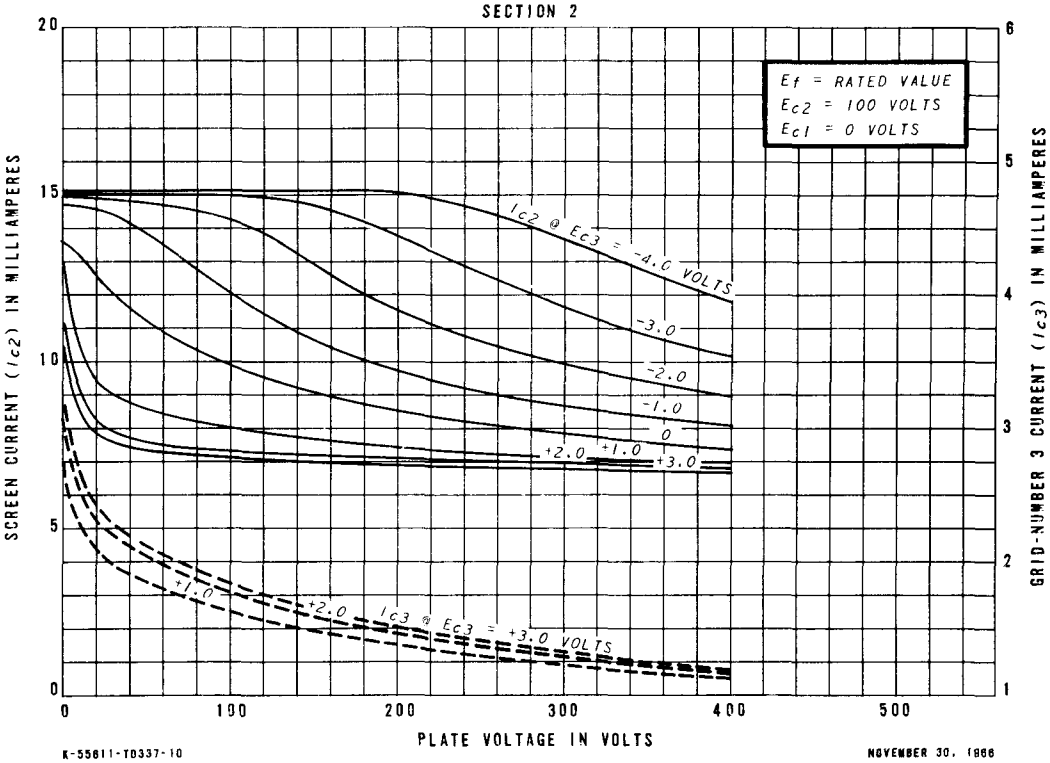
AVERAGE CHARACTERISTICS

SECTION 2



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AVERAGE TRANSFER CHARACTERISTICS

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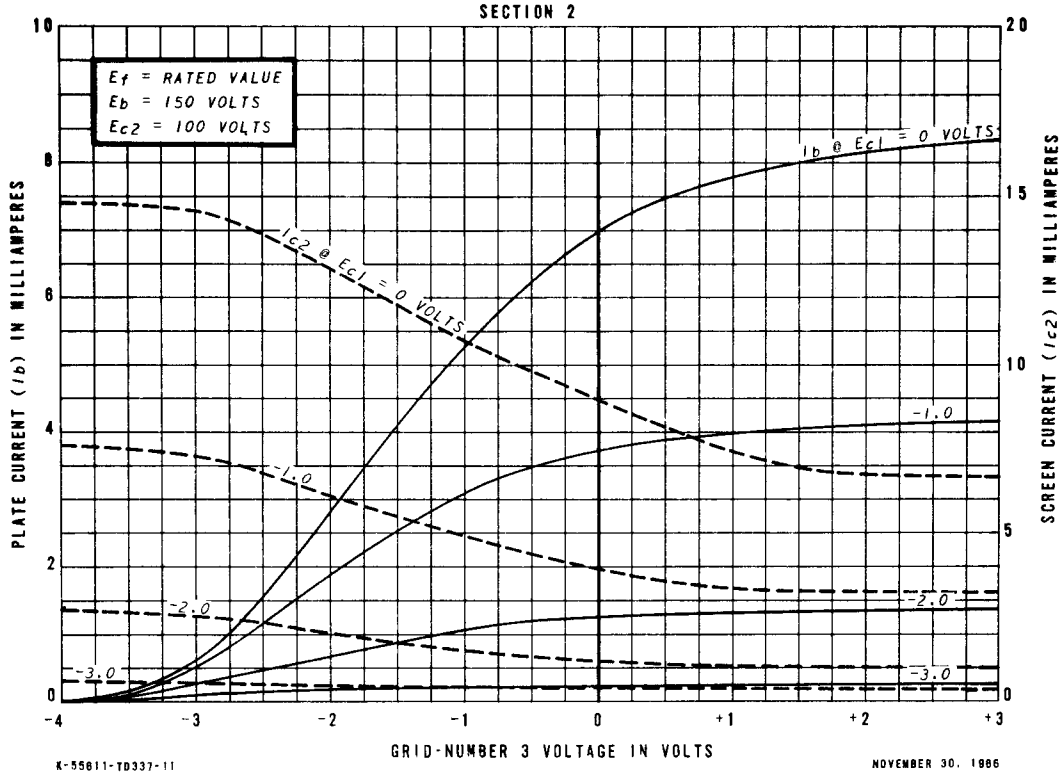
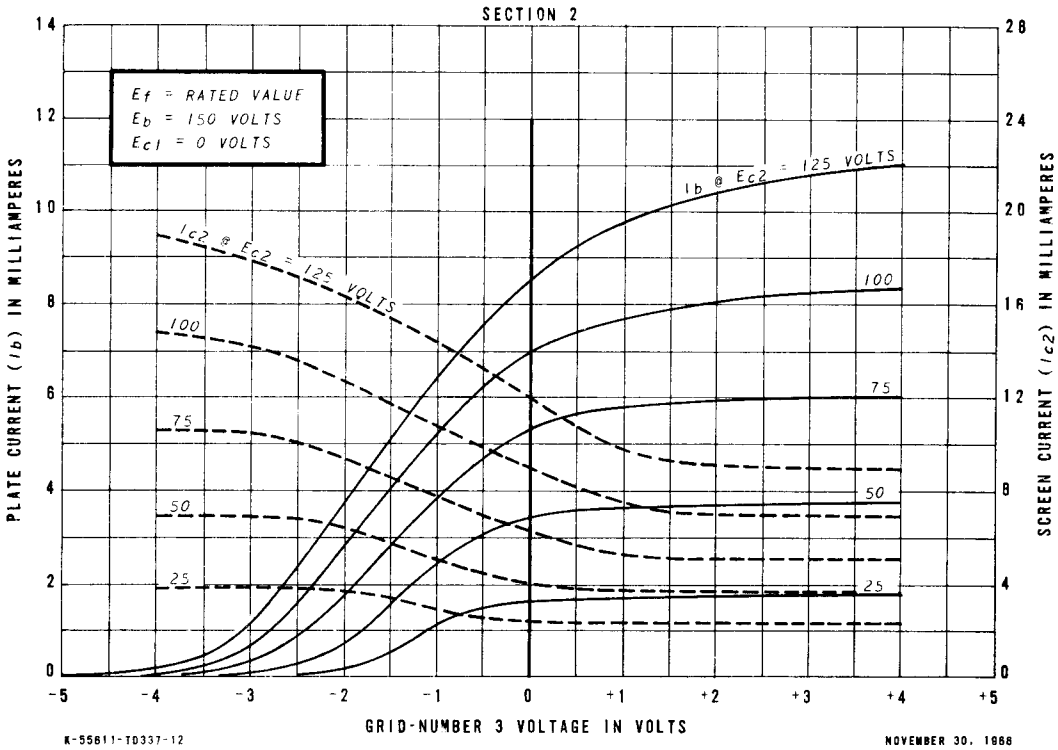


AVERAGE TRANSFER CHARACTERISTICS

SECTION 2



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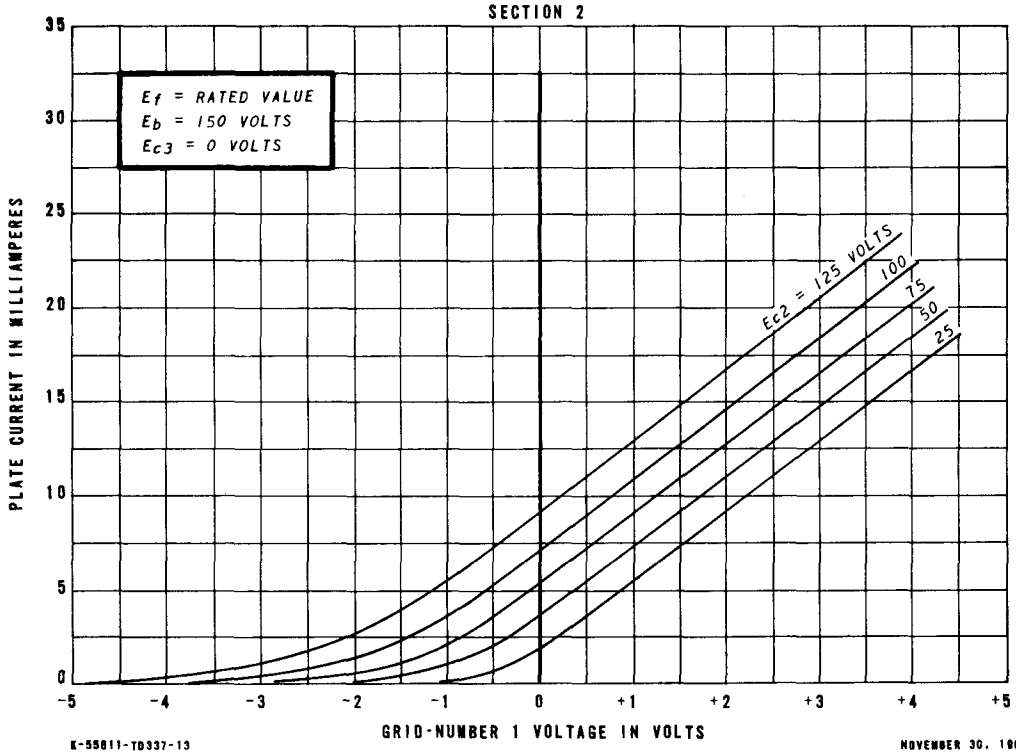

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AVERAGE TRANSFER CHARACTERISTICS

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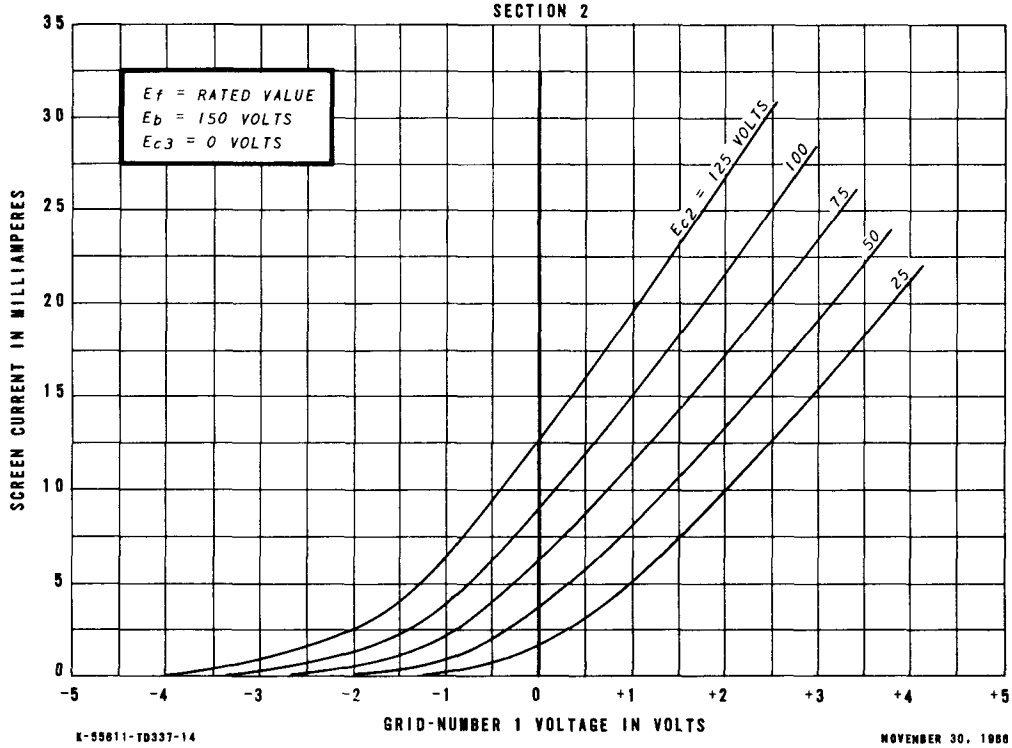

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