

6AK9

Compactron Dissimilar-Double-Triode Pentode

- **COLOR TV TYPE**
- **VERTICAL OUTPUT PENTODE**
- **VERTICAL OSCILLATOR**
- **MULTI-FUNCTION**
- **10 WATTS PLATE DISSIPATION**
- **SYNC CLIPPER**

The 6AK9 is a multifunction compactron containing two dissimilar triodes and a beam pentode. The pentode section is suitable for vertical-deflection amplifier service in medium-sized color television receivers. Triode Section 2 (pins 2, 3 and 7) has an amplification factor of 20 and is especially suited for vertical oscillator use. Triode Section 1 has an amplification factor of 43 and is well suited for sync-clipper applications.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC* . . . 6.3±0.6 Volts

Heater Current† . . . 1.6 Amperes

Direct Interelectrode Capacitances‡

Triode (Section 1)

Grid to Plate: (T1g to T1p) . . . 3.2 pf

Input: T1g to (h + k + Pb.p.) . . . 3.2 pf

Output: T1p to (h + k + Pb.p.) . . . 0.56 pf

Triode (Section 2)

Grid to Plate: (T2g to T2p) . . . 3.6 pf

Input: T2g to (h + k + Pb.p.) . . . 2.2 pf

Output: T2p to (h + k + Pb.p.) . . . 0.6 pf

Pentode Section

Grid-Number 1 to Plate: (Pg1 to Pp) . 0.22 pf

Input: Pg1 to (h + k + Pg2 + Pb.p.) . 12 pf

Output: Pp to (h + k + Pg2 + Pb.p.) . 8.0 pf

MECHANICAL

Operating Position - Any

Envelope - T-12, Glass

Base - E12-74, Button 12-Pin

Outline Drawing - EIA 12-56

Maximum Diameter . . . 1.563 Inches

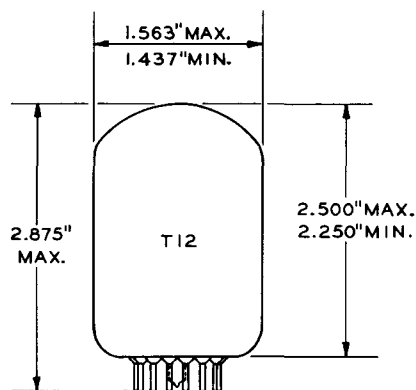
Minimum Diameter . . . 1.437 Inches

Maximum Over-all Length . . . 2.875 Inches

Maximum Seated Height . . . 2.500 Inches

Minimum Seated Height . . . 2.250 Inches

PHYSICAL DIMENSIONS

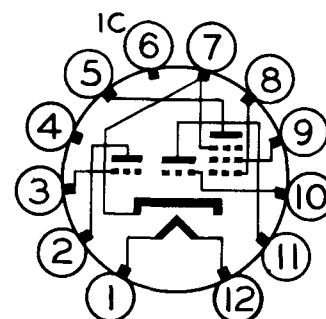


EIA 12-56

TERMINAL CONNECTIONS

- Pin 1 - Heater
- Pin 2 - Triode Plate (Section 2)
- Pin 3 - Triode Grid (Section 2)
- Pin 4 - No Connection
- Pin 5 - Pentode Plate
- Pin 6 - Internal Connection - Do Not Use
- Pin 7 - Cathode and Pentode Beam Plates
- Pin 8 - Pentode Grid Number 1
- Pin 9 - Pentode Grid Number 2 (Screen)
- Pin 10 - Triode Grid (Section 1)
- Pin 11 - Triode Plate (Section 1)
- Pin 12 - Heater

BASING DIAGRAM



EIA 12GZ

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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—Vertical Deflection Amplifier Service#

DC Plate Voltage	350	Volts
Peak Pulse Plate Voltage.	2500	Volts
Screen Voltage	250	Volts
Peak Negative Grid-Number 1 Voltage	150	Volts
Plate Dissipation	10	Watts
Screen Dissipation.	2.0	Watts
Total DC Plate and Screen Current.	80	Milliamperes
Total Peak Plate and Screen Current	245	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.	1.0	Megohms
With Degenerative Bias Δ	2.2	Megohms

Triode (Section 1)

Plate Voltage	330	Volts
Positive DC Grid Voltage.	0	Volts
Plate Dissipation	1.25	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

Triode (Section 2)—Vertical Oscillator Service#

DC Plate Voltage	330	Volts
Peak Negative Grid Voltage	400	Volts
Plate Dissipation	1.0	Watts
DC Plate Current	20	Milliamperes
Peak Plate Current.	70	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-Circuit Resistance		
With Fixed Bias.	1.0	Megohms
With Degenerative Bias Δ	2.2	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	60	150	Volts
Screen Voltage	125	150	Volts
Grid-Number 1 Voltage.	0 ϕ	-14	Volts
Plate Resistance, approximate	---	16400	Ohms
Transconductance	---	6200	Micromhos
Plate Current	140	49	Milliamperes
Screen Current	18	3.5	Milliamperes
Grid-Number 1 Voltage, approximate Ib = 100 Microamperes	---	-33	Volts

Triode (Section 1)

Plate Voltage	150	Volts
Grid Voltage.	-2.0	Volts
Amplification Factor	43	
Plate Resistance, approximate	11000	Ohms
Transconductance	3900	Micromhos
Plate Current	5.4	Milliamperes
Grid Voltage, approximate Ib = 10 Microamperes	-5.7	Volts

Triode (Section 2)

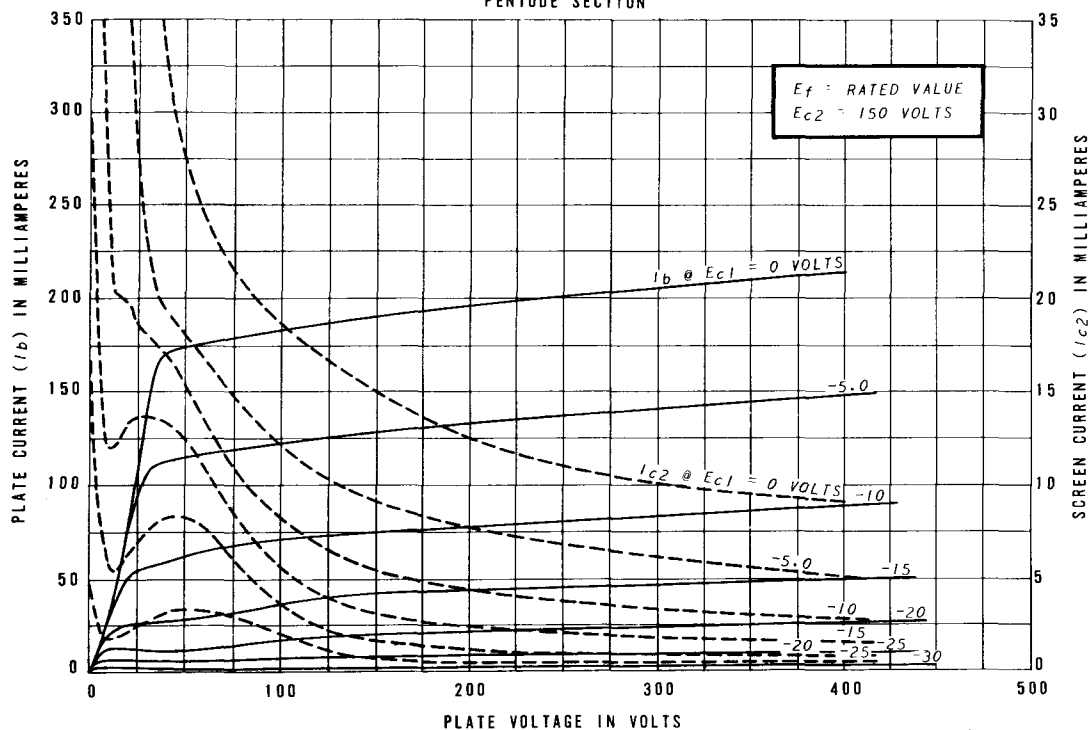
Plate Voltage	150	Volts
Grid Voltage.	-5.0	Volts
Amplification Factor	20	
Plate Resistance, approximate	8500	Ohms
Transconductance	2350	Micromhos
Plate Current	5.5	Milliamperes
Grid Voltage, approximate Ib = 10 Microamperes	-11	Volts

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.
- # For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.
- Δ Degenerative bias is defined as bias derived wholly from a cathode resistor or any feedback system which achieves an equivalent reduction in gain.
- ¢ Applied for short interval (two seconds maximum) so as not to damage tube.

AVERAGE PLATE CHARACTERISTICS

PENTODE SECTION

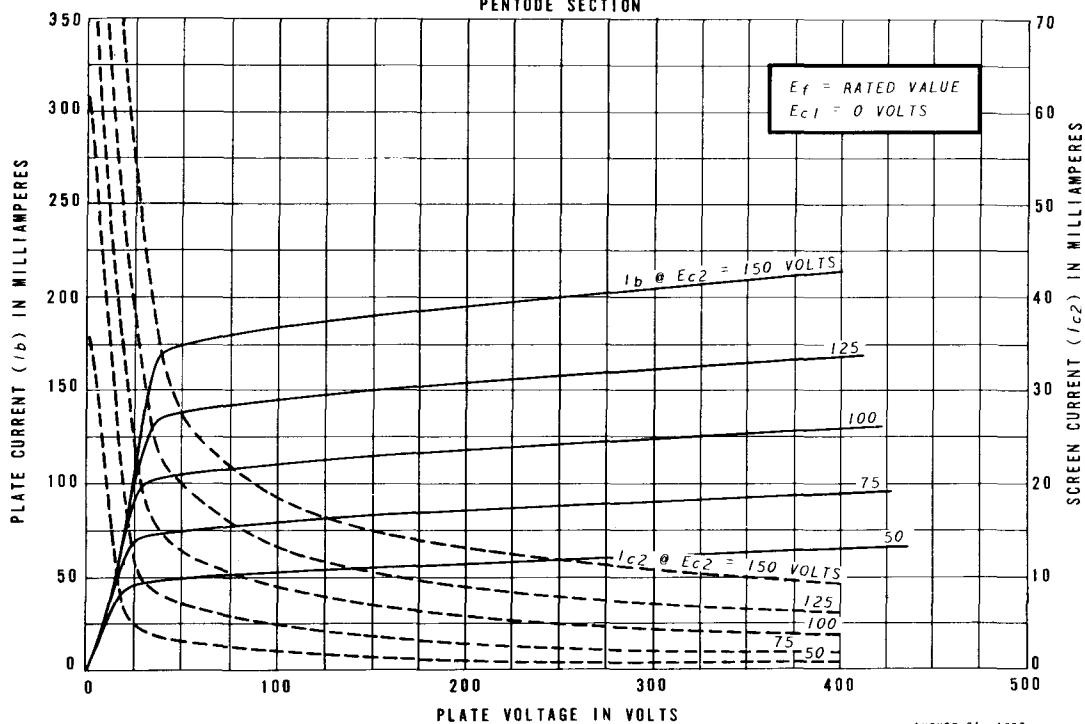


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AUGUST 21, 1967

AVERAGE PLATE CHARACTERISTICS

PENTODE SECTION

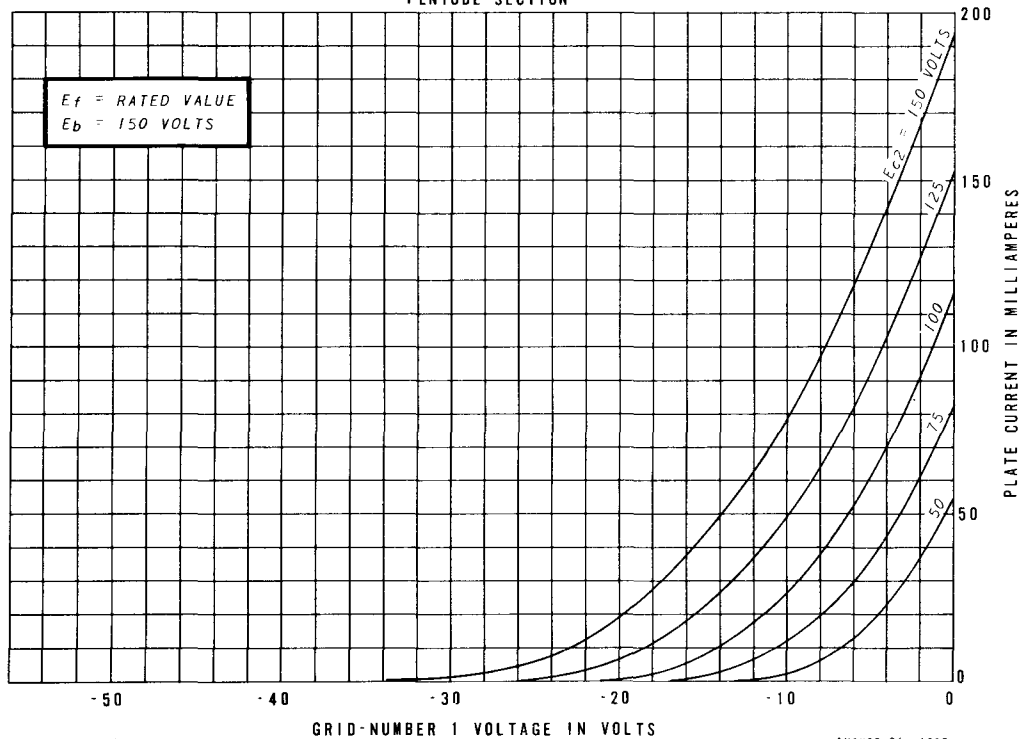


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AUGUST 21, 1967

AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION

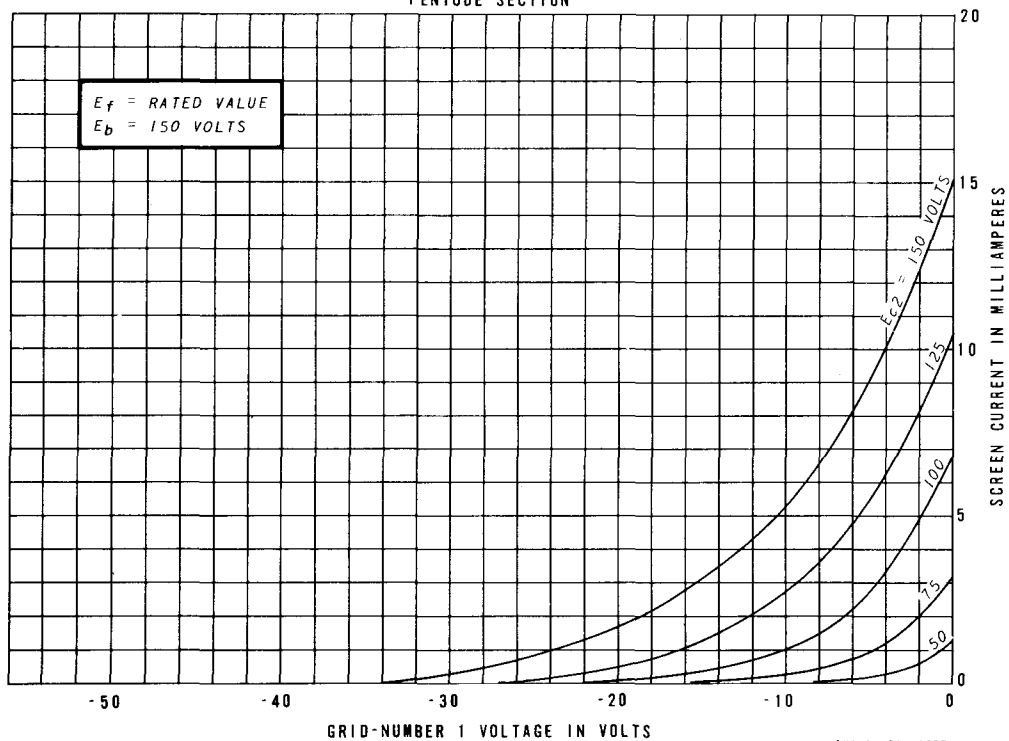


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AUGUST 21, 1967

AVERAGE TRANSFER CHARACTERISTICS

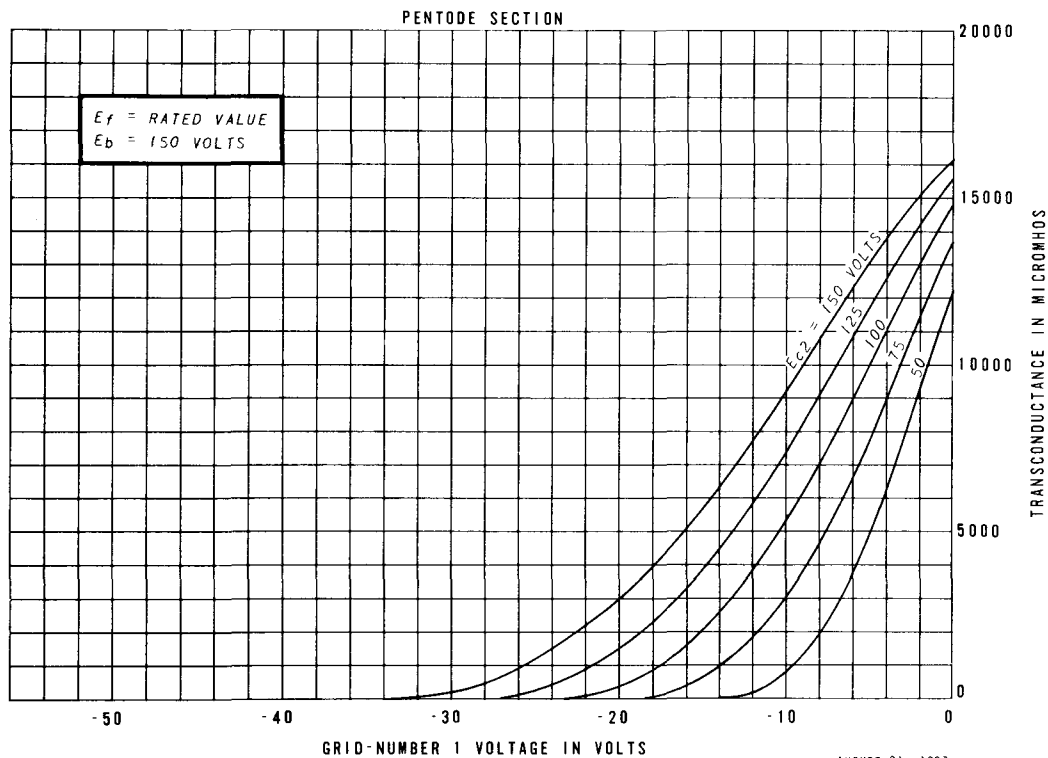
PENTODE SECTION



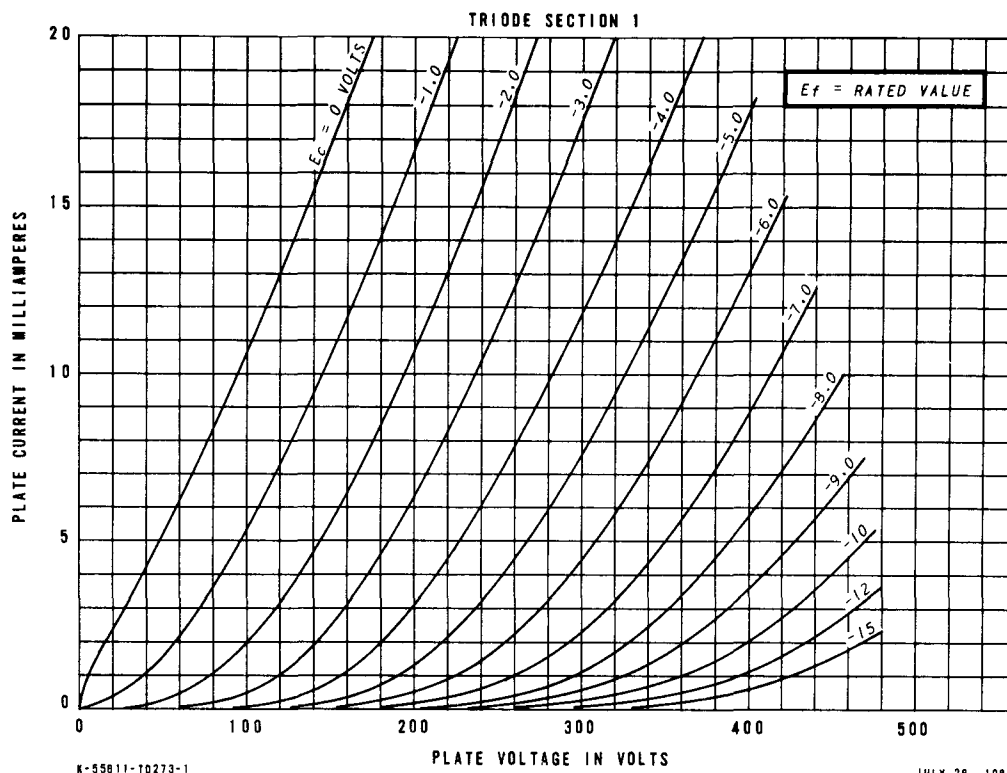
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AVERAGE TRANSFER CHARACTERISTICS

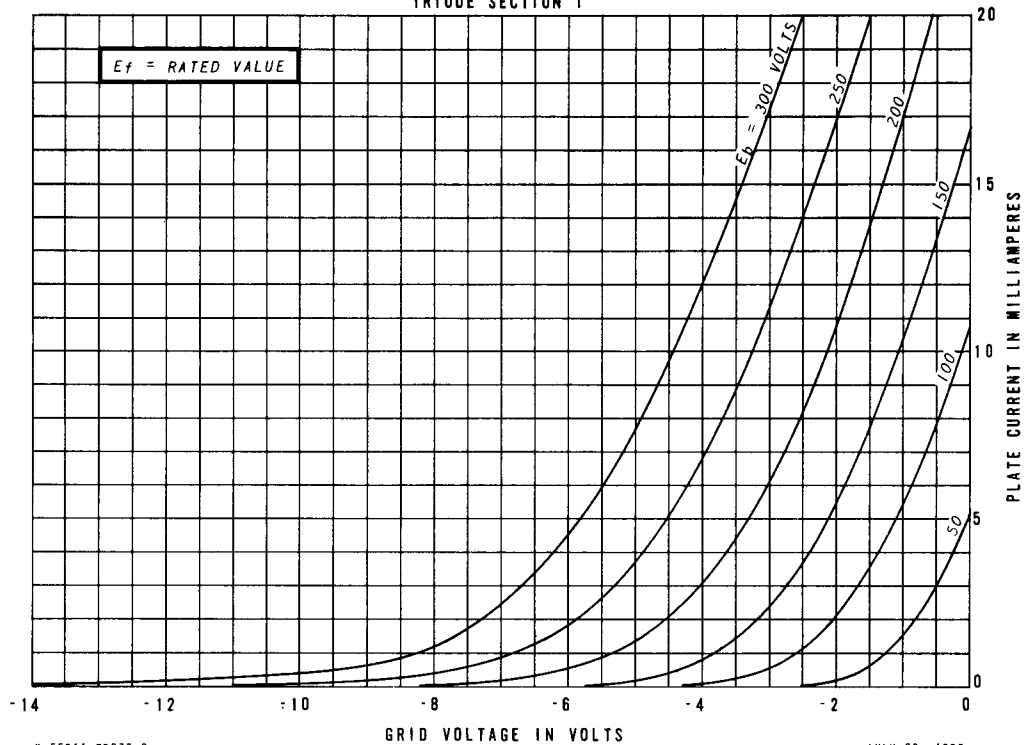


AVERAGE PLATE CHARACTERISTICS



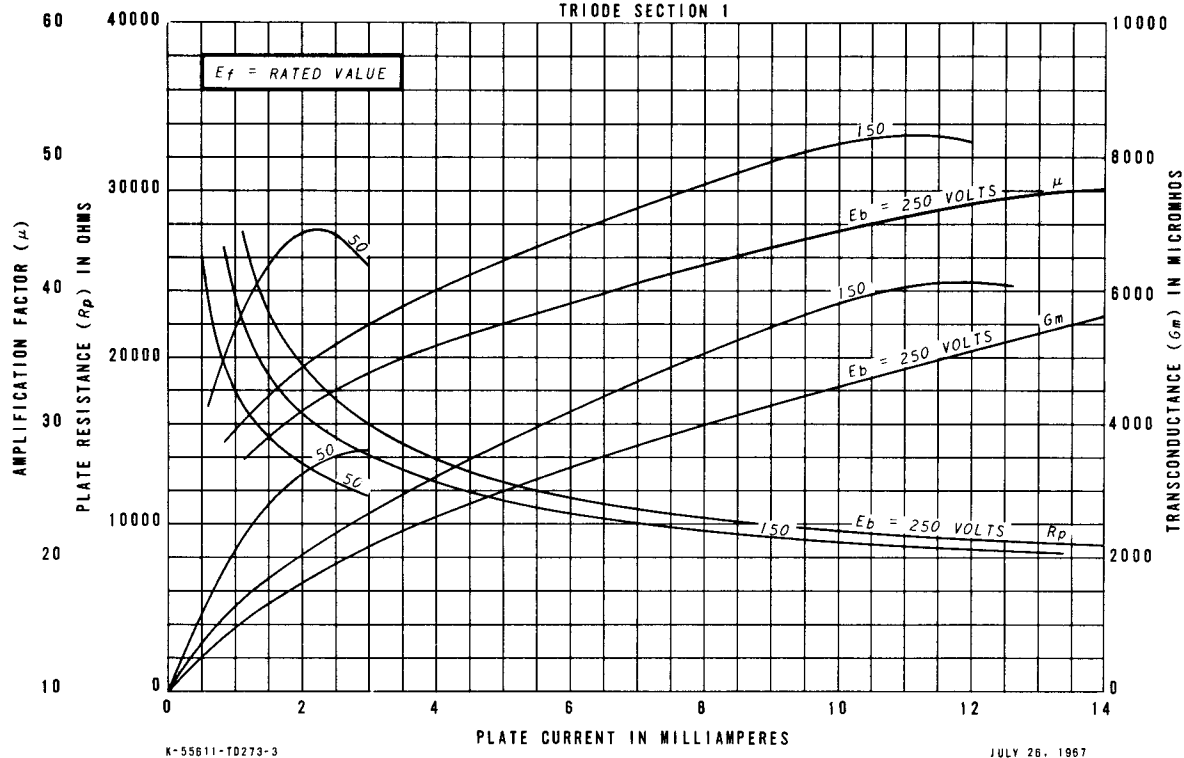
AVERAGE TRANSFER CHARACTERISTICS

TRIODE SECTION 1



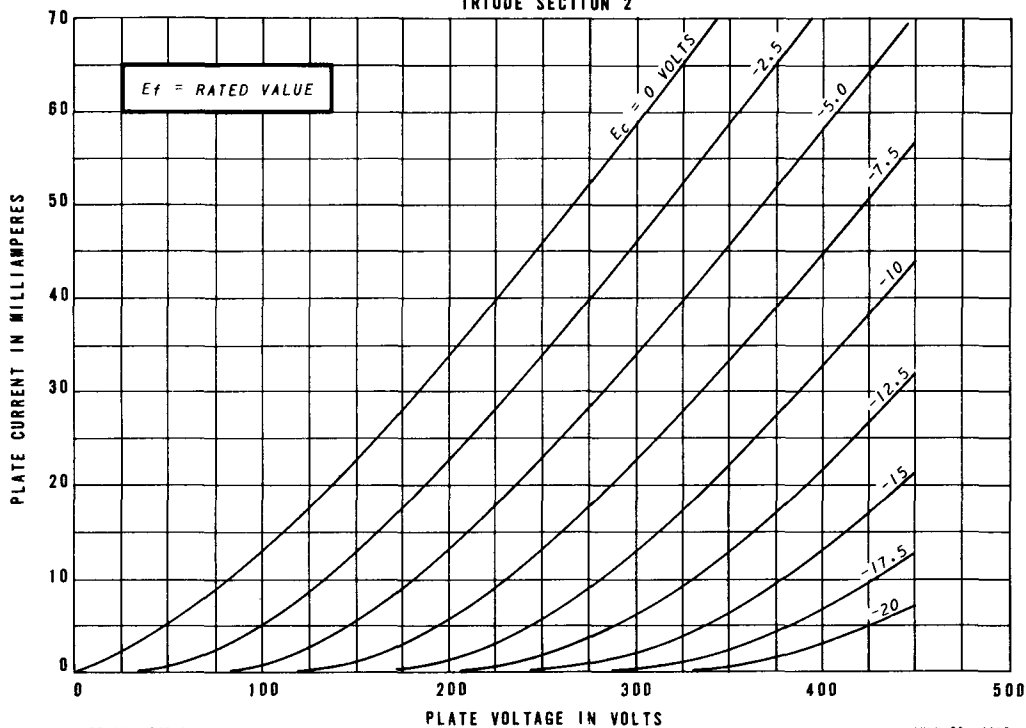
AVERAGE CHARACTERISTICS

TRIODE SECTION 1



AVERAGE PLATE CHARACTERISTICS

TRIODE SECTION 2

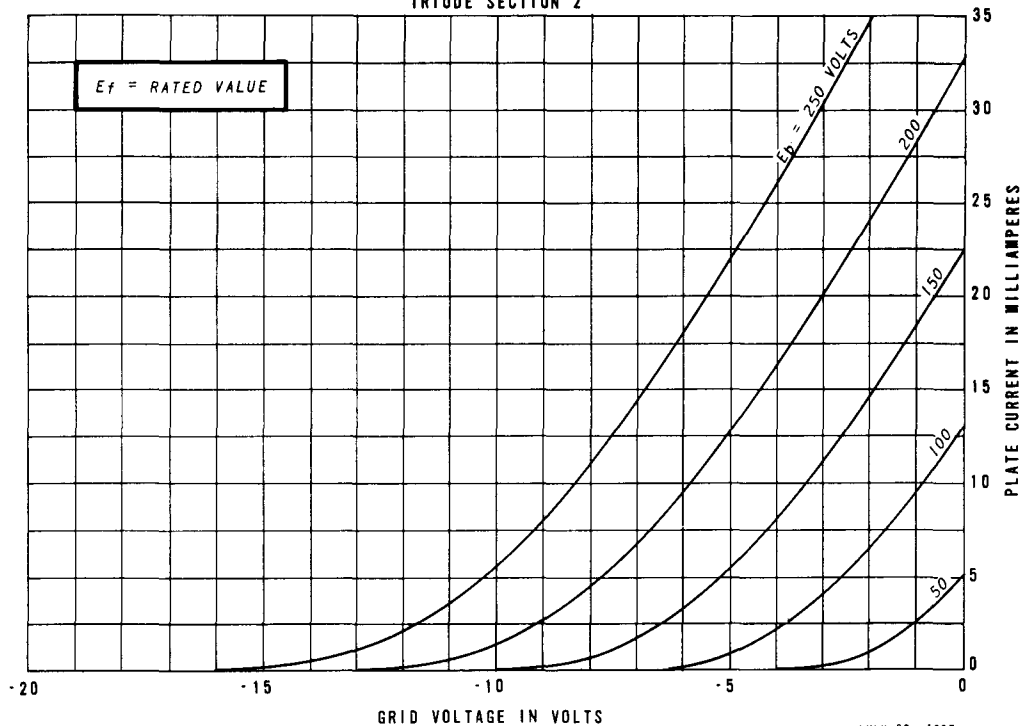


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JULY 26, 1967

AVERAGE TRANSFER CHARACTERISTICS

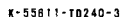
TRIODE SECTION 2



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JULY 26, 1967

TRIODE SECTION 2



JULY 28, 1967

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