

**BEAM PENTODE**

**DESCRIPTION AND RATING**

The 18A5 is a beam-power pentode designed for use as the horizontal-deflection amplifier in compact, 300-milliampere, series-string television receivers. The tube features relatively small size, low power requirements, and high performance capabilities at the low d-c supply voltages normally available in this application. The tube also has a controlled heater warm-up characteristic as required for use in television receivers that employ series-connected heaters.

**GENERAL**

**ELECTRICAL**

Cathode—Coated Unipotential	
Heater Voltage, AC or DC	18.5 Volts
Heater Current	0.3 ± 6% Amperes
Heater Warm-up Time*	11 Seconds
Direct Interelectrode Capacitances, approximate †	
Grid-Number 1 to Plate	0.7 μmf
Input	13 μmf
Output	7.0 μmf

**MECHANICAL**

Mounting Position—Any  
Envelope—T-9, Glass  
Base—B6-8, Intermediate Shell Octal 6-Pin  
or B6-60, Short Intermediate Shell Octal 6-Pin

**MAXIMUM RATINGS**

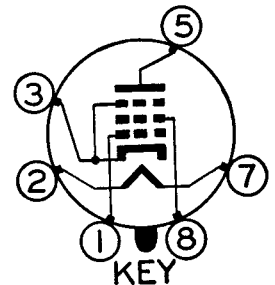
**HORIZONTAL-DEFLECTION AMPLIFIER SERVICE‡**

**DESIGN-MAXIMUM VALUES**

DC Plate-Supply Voltage (Boost † DC Power Supply)	350 Volts
Peak Positive Pulse Plate Voltage	3000 Volts
Peak Negative Pulse Plate Voltage	600 Volts
Screen Voltage	160 Volts
Peak Negative Grid-Number 1 Voltage	250 Volts
Plate Dissipation§	9.0 Watts
Screen Dissipation	2.5 Watts
DC Cathode Current	90 Milliamperes
Peak Cathode Current	310 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	1.0 Megohms
Bulb Temperature at Hottest Point	190 C

Design-Maximum Ratings are the limiting values expressed with respect to bogie tubes at which satisfactory tube life can be expected to occur for the types of service for which the tube is rated. Therefore, the equipment designer must establish the circuit design so that initially and throughout equipment life no design-maximum value is exceeded with a bogie tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, and environmental conditions.

**BASING DIAGRAM**

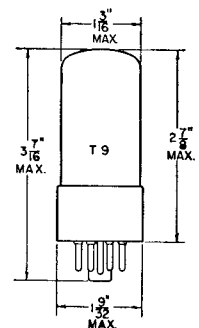


RETMA 6CK

**TERMINAL CONNECTIONS**

- Pin 1—Grid Number 1
- Pin 2—Heater
- Pin 3—Cathode and Beam Plates
- Pin 5—Plate
- Pin 7—Heater
- Pin 8—Grid Number 2 (Screen)

**PHYSICAL DIMENSIONS**



RETMA 9-15  
OR 9-43

## CHARACTERISTICS AND TYPICAL OPERATION

### AVERAGE CHARACTERISTICS

Plate Voltage .....	60	200 Volts
Screen Voltage .....	125	125 Volts
Grid-Number 1 Voltage .....	0♠	-17 Volts
Plate Resistance, approximate .....	....	27000 Ohms
Transconductance .....	....	4800 Micromhos
Plate Current .....	165	40 Milliamperes
Screen Current .....	15	1.1 Milliamperes
Grid-Number 1 Voltage, approximate I <sub>b</sub> = 1.0 Milliampere .....	....	-36 Volts
Triode Amplification Factor ¶ .....	....	4.6

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

† Without external shield.

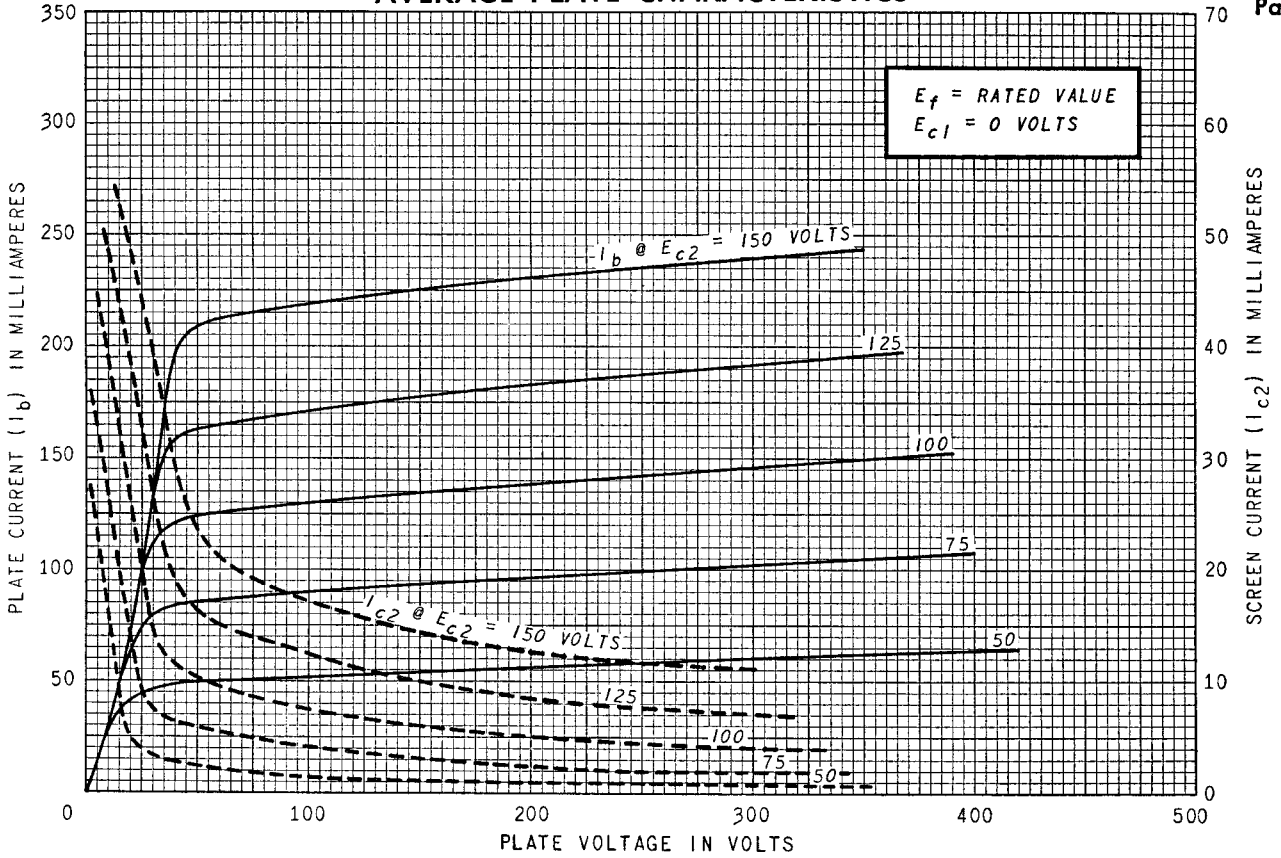
‡ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

§ In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

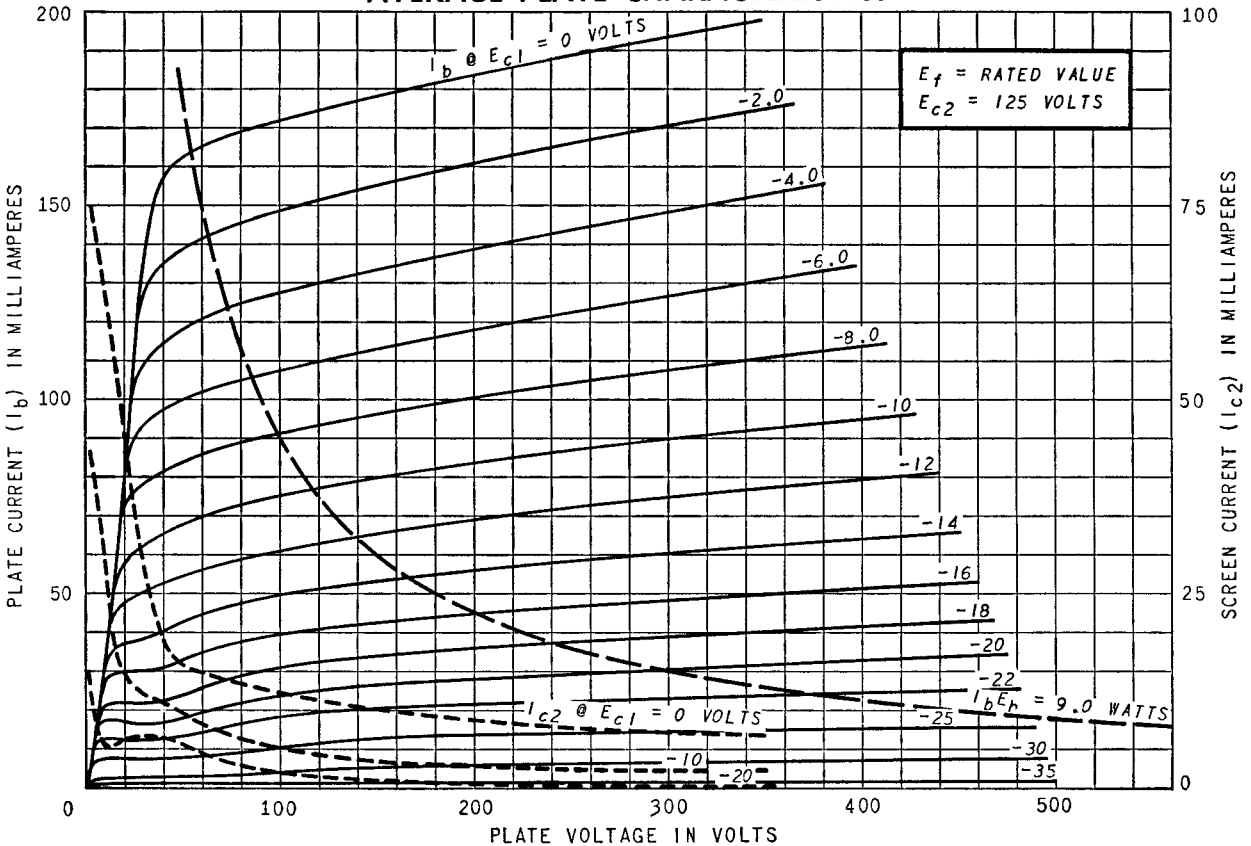
♠ Applied for short interval (two seconds maximum) so as not to damage tube.

¶ Triode connection (screen tied to plate) with E<sub>b</sub> = E<sub>c2</sub> = 125 volts and E<sub>c1</sub> = -17 volts.

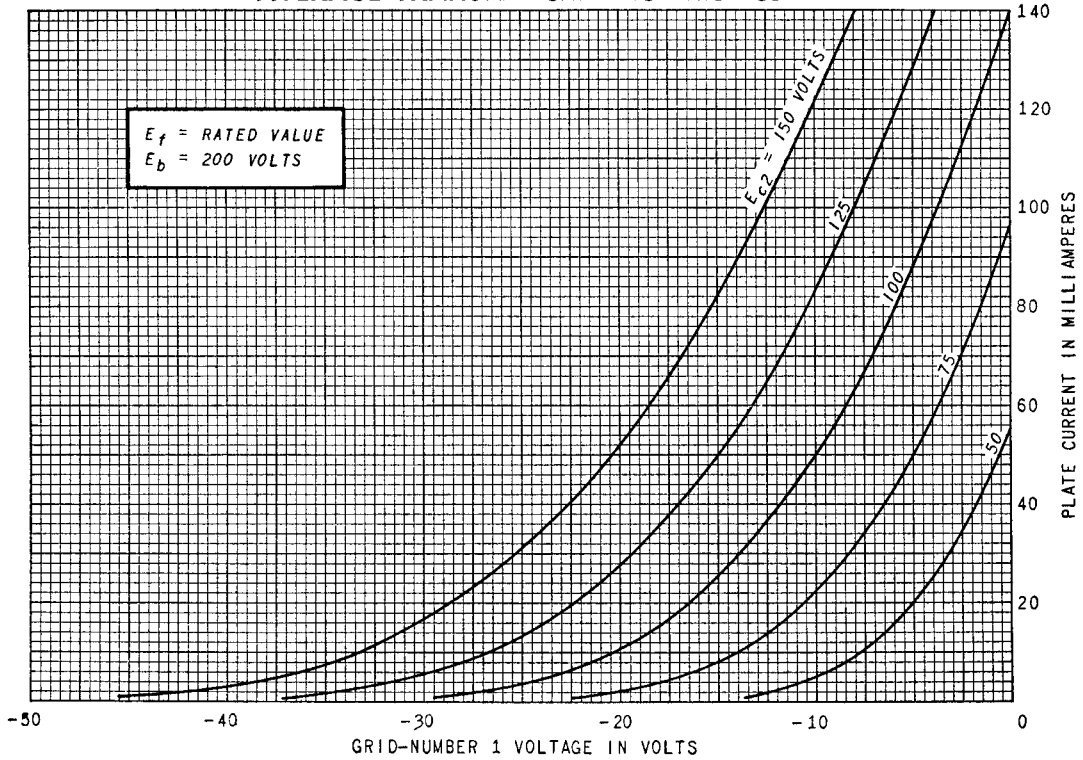
**AVERAGE PLATE CHARACTERISTICS**



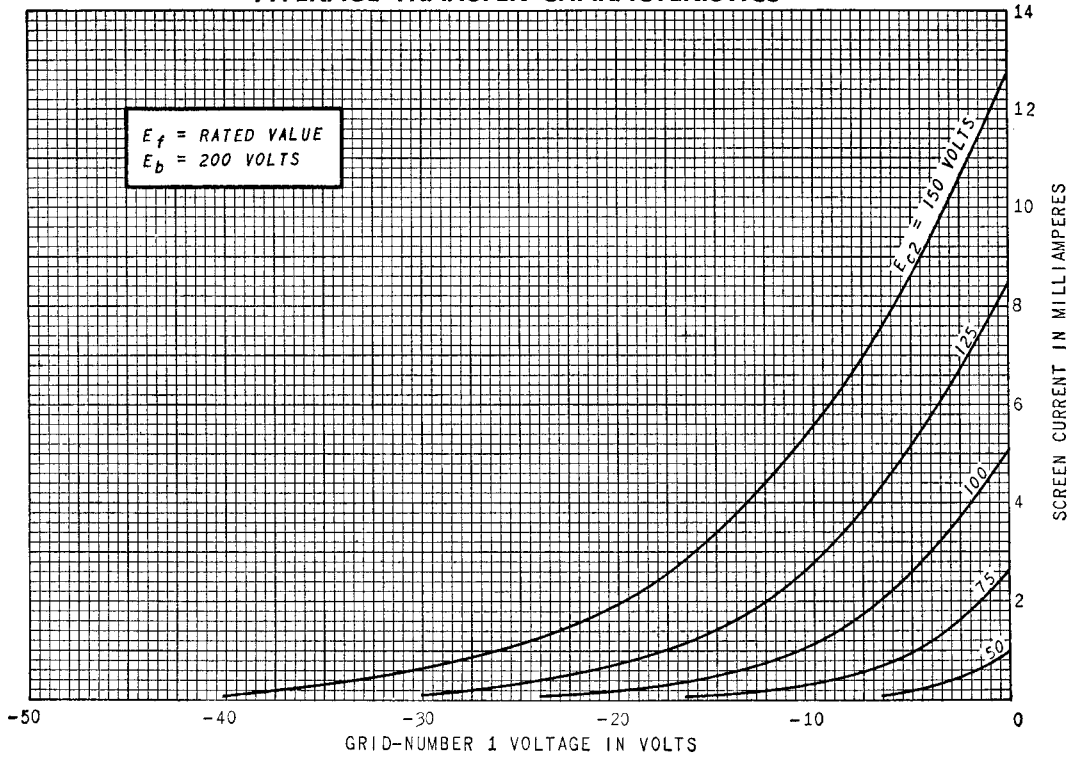
**AVERAGE PLATE CHARACTERISTICS**



**AVERAGE TRANSFER CHARACTERISTICS**



**AVERAGE TRANSFER CHARACTERISTICS**



**TUBE DEPARTMENT**



**Schenectady 5, N. Y.**