Electronic TUBES

# 6AQ5—5AQ5

## BEAM PENTODE

## DESCRIPTION AND RATING

The 6AQ5 is a miniature beam-power pentode designed for use in the audio-frequency power output stage of television and radio receivers. It may also be used as a triode-connected vertical deflection amplifier in television receivers. Within its maximum ratings, the performance of the 6AQ5 is equivalent to that of the 6V6-GT.

Except for heater ratings, the 5AQ5 is identical to the 6AQ5. In addition, the 5AQ5, as a result of its controlled heater warm-up characteristic, is especially suited for use in television receivers which employ series-connected heaters. When the 5AQ5 is used in conjunction with other 600-milliampere types which exhibit essentially the same heater warm-up characteristic, heater voltage surges across the individual tubes are minimized during the warm-up period.

### GENERAL

**ELECTRICAL**

| | 5AQ5 | 6AQ5 | |
|---|---|---|---|
| Cathode—Coated Unipotential | | | |
| Heater Voltage, AC or DC | 4.7 | 6.3 | Volts |
| Heater Current | 0.6 | 0.45 | Ampere |
| Heater Warm-up Time* | 11 | .... | Seconds |
| Direct Interelectrode Capacitances, approximate† | | | |
| Grid-Number 1 to Plate | | 0.4 | μμf |
| Input | | 8.0 | μμf |
| Output | | 8.5 | μμf |

**MECHANICAL**

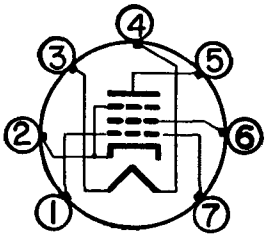
Mounting Position—Any
Envelope—T-5½, Glass
Base—E7-1, Miniature Button 7-Pin

### MAXIMUM RATINGS

**DESIGN-CENTER VALUES UNLESS OTHERWISE INDICATED**

| | Class A1 Amplifier | Vertical-Deflection Amplifier‡ (Triode Connection)§ | |
|---|---|---|---|
| DC Plate Voltage | 250 | 250 | Volts |
| Peak Positive Pulse Plate Voltage | | 1100π | Volts |
| Screen Voltage | 250 | ... | Volts |
| Peak Negative Grid-Number 1 Voltage | | 250 | Volts |
| Plate Dissipation | 12 | 9.0▲ | Watts |
| Screen Dissipation | 2.0 | ... | Watts |
| DC Cathode Current | | 35 | Milliamperes |
| Peak Cathode Current | | 105 | 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 |
| Grid-Number 1 Circuit Resistance | | | |
| With Fixed Bias | 0.1 | ... | Megohms |
| With Cathode Bias | 0.5 | 2.2 | Megohms |
| Bulb Temperature at Hottest Point | 250 | 250 | C |

**BASING DIAGRAM**

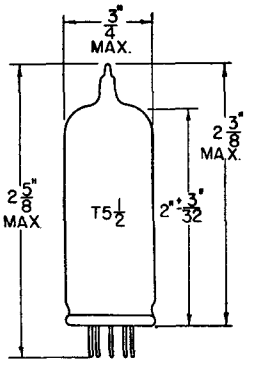



RETMA 7BZ

**TERMINAL CONNECTIONS**

Pin 1—Grid-Number 1
Pin 2—Cathode and Beam Plates
Pin 3—Heater
Pin 4—Heater
Pin 5—Plate
Pin 6—Grid-Number 2 (Screen)
Pin 7—Grid-Number 1

**PHYSICAL DIMENSIONS**




RETMA 5-3

GENERAL ELECTRIC

*Supersede ET-T271D dated 6-53*

## CLASS $A_1$ AMPLIFIER

| | | | |
|---|---|---|---|
| Plate Voltage | 180 | 250 | Volts |
| Screen Voltage | 180 | 250 | Volts |
| Grid-Number 1 Voltage | −8.5 | −12.5 | Volts |
| Peak AF Grid-Number 1 Voltage | 8.5 | 12.5 | Volts |
| Plate Resistance, approximate | 58000 | 52000 | Ohms |
| Transconductance | 3700 | 4100 | Micromhos |
| Zero-Signal Plate Current | 29 | 45 | Milliamperes |
| Maximum-Signal Plate Current | 30 | 47 | Milliamperes |
| Zero-Signal Screen Current | 3.0 | 4.5 | Milliamperes |
| Maximum-Signal Screen Current | 4.0 | 7.0 | Milliamperes |
| Load Resistance | 5500 | 5000 | Ohms |
| Total Harmonic Distortion, approximate | 8 | 8 | Percent |
| Maximum-Signal Power Output | 2.0 | 4.5 | Watts |

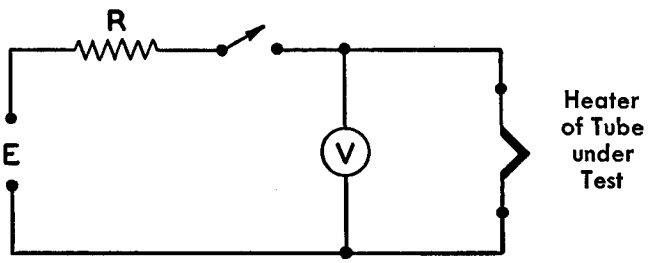
## PUSH-PULL CLASS $AB_1$ AMPLIFIER, VALUES FOR TWO TUBES

| | | |
|---|---|---|
| Plate Voltage | 250 | Volts |
| Screen Voltage | 250 | Volts |
| Grid-Number 1 Voltage | −15 | Volts |
| Peak AF Grid-to-Grid Voltage | 30 | Volts |
| Zero-Signal Plate Current | 70 | Milliamperes |
| Maximum-Signal Plate Current | 79 | Milliamperes |
| Zero-Signal Screen Current | 5.0 | Milliamperes |
| Maximum-Signal Screen Current | 13 | Milliamperes |
| Effective Load Resistance, Plate-to-Plate | 10000 | Ohms |
| Total Harmonic Distortion | 5 | Percent |
| Maximum-Signal Power Output | 10 | Watts |

## AVERAGE CHARACTERISTICS, TRIODE CONNECTION§

| | | |
|---|---|---|
| Plate Voltage | 250 | Volts |
| Grid-Number 1 Voltage | −12.5 | Volts |
| Amplification Factor | 9.5 | |
| Plate Resistance, approximate | 1970 | Ohms |
| Transconductance | 4800 | Micromhos |
| Plate Current | 49.5 | Milliamperes |
| Grid-Number 1 Voltage, approximate $I_b$ = 0.5 Milliampere | −37 | Volts |

* Heater warm-up time is defined as the time required in the circuit shown at the right for the voltage across the heater terminals to increase from zero to the heater test voltage ($V_1$). For this type, E = 18.7 volts (RMS or DC), $V_1$ = 3.73 volts (RMS or DC), and R = 23.5 ohms.

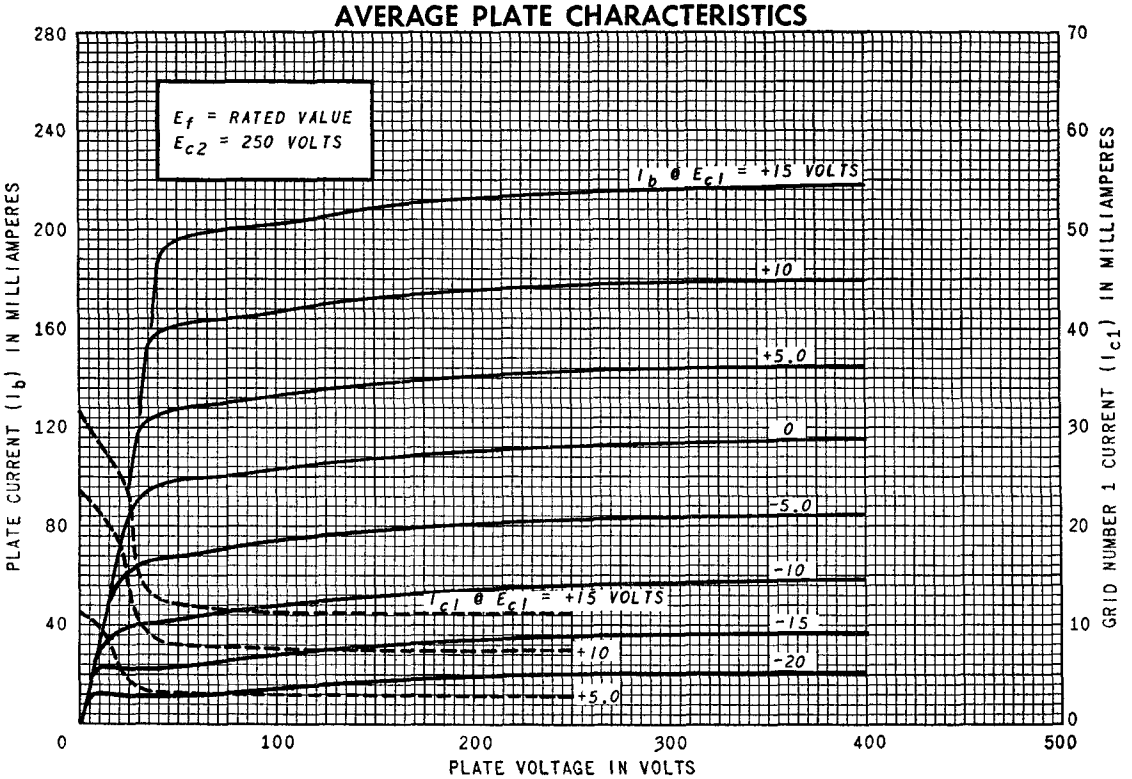



† Without external shield.
‡ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.
§ With screen tied to plate.

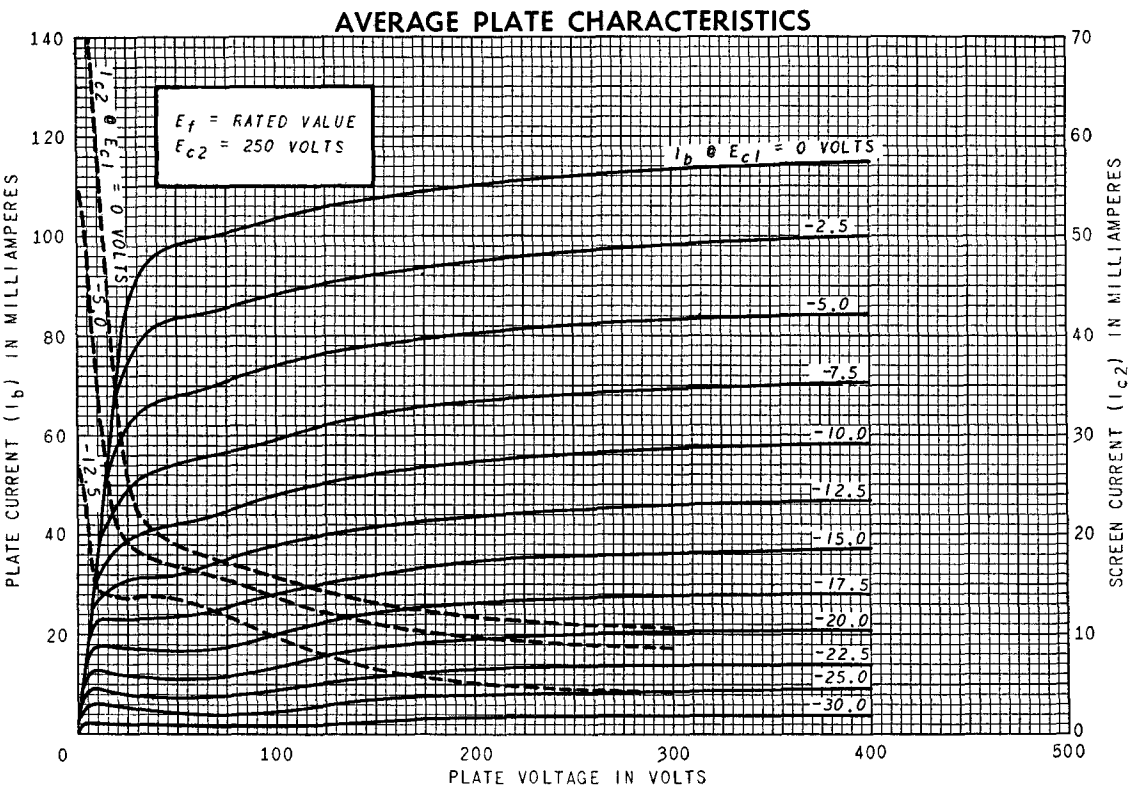
π Value given is to be considered as an Absolute Maximum Rating. In this case, the combined effect of supply voltage variation, manufacturing variation including components in the equipment, and adjustment of equipment controls should not cause the rated value to be exceeded.

▲ 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.

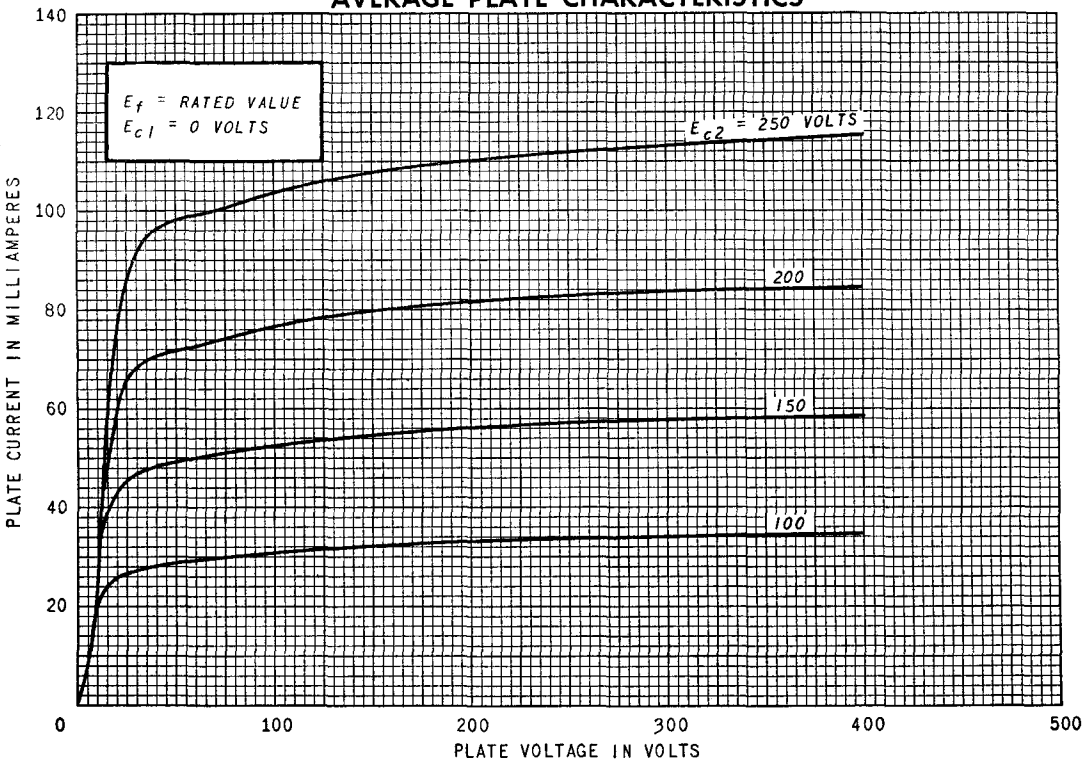
## AVERAGE PLATE CHARACTERISTICS




## AVERAGE PLATE CHARACTERISTICS

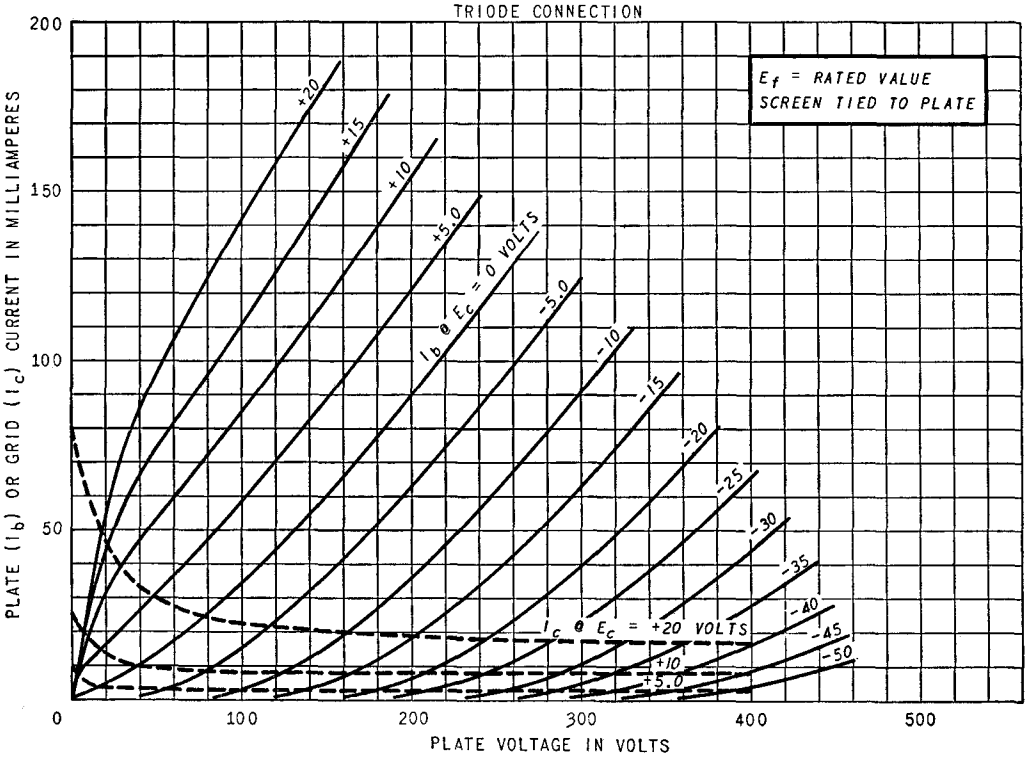


## AVERAGE PLATE CHARACTERISTICS

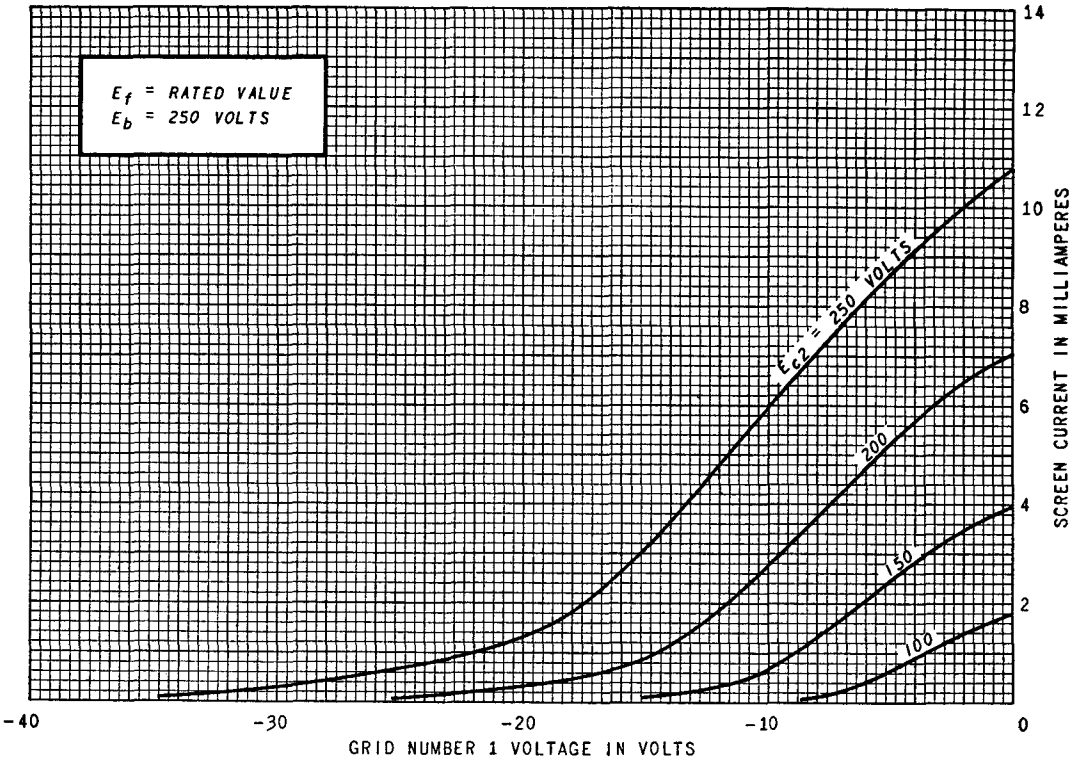



## AVERAGE PLATE CHARACTERISTICS

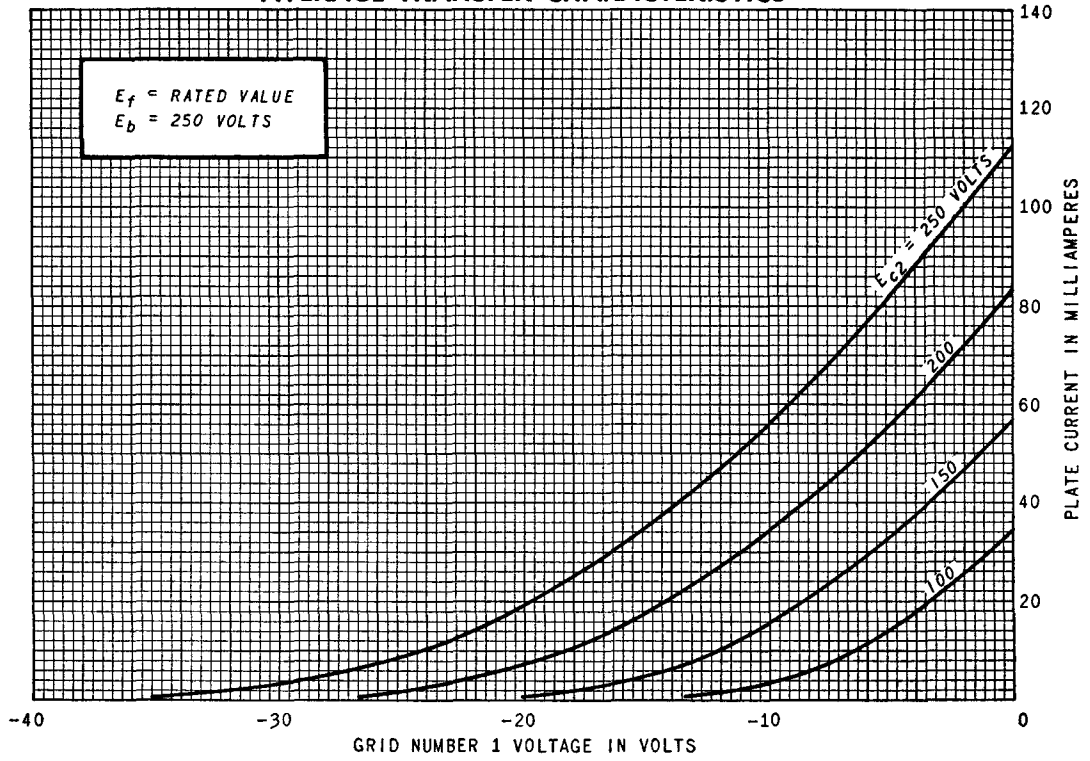
TRIODE CONNECTION



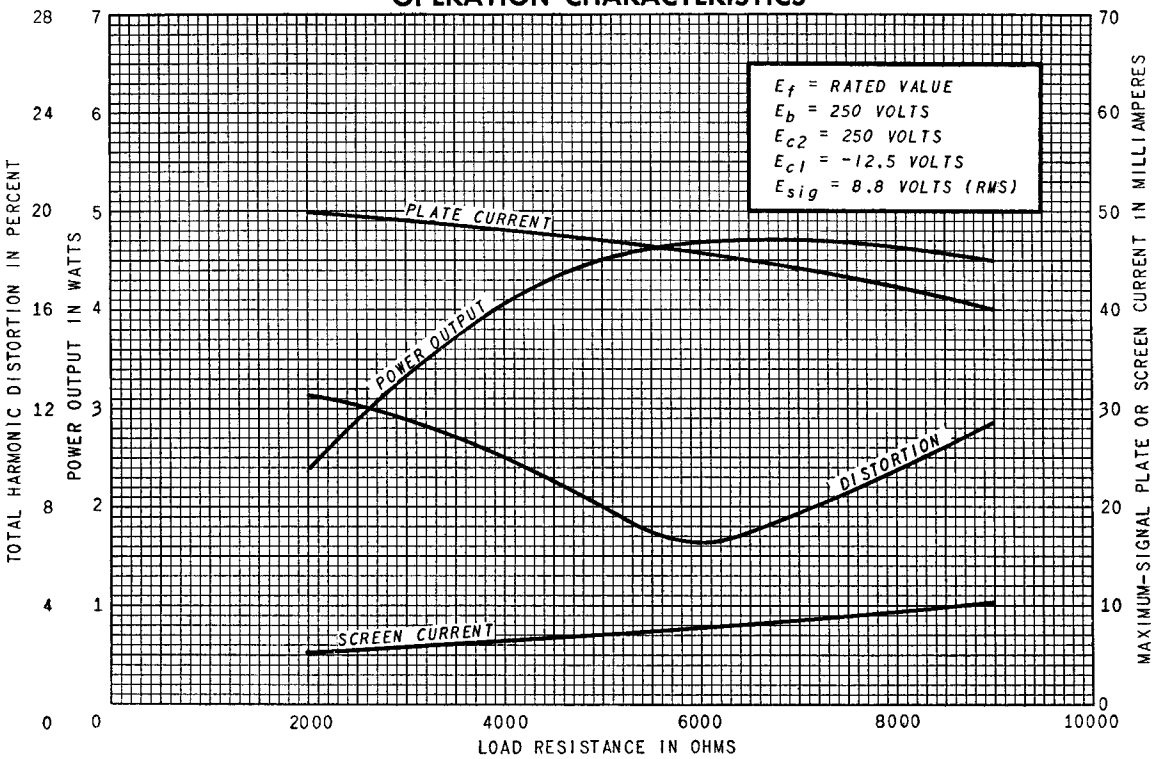
## AVERAGE TRANSFER CHARACTERISTICS




## AVERAGE TRANSFER CHARACTERISTICS



## OPERATION CHARACTERISTICS




**TUBE DEPARTMENT**

**GENERAL ELECTRIC**

**Schenectady 5, N. Y.**

PRINTED IN U.S.A.