

# Sharp-Cutoff Pentode

## 9-PIN MINIATURE TYPE

For Audio-Amplifier Applications Critical  
as to Microphonism, Leakage Noise, and Hum

### GENERAL DATA

#### Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC) . . . . .  $6.3 \pm 10\%$  volts

Current at 6.3 volts. . . . . 0.15 amp

Direct Interelectrode Capacitances:<sup>a</sup>

#### Pentode Connection:

Grid No.1 to plate. . . . . 0.11 max.  $\mu\text{mf}$

Grid No.1 to cathode, grid No.3,  
grid No.2, heater, and pins 2 and 6. . . . . 2.7  $\mu\text{mf}$

Plate to cathode, grid No.3,  
grid No.2, heater, and pins 2 and 6. . . . . 2.4  $\mu\text{mf}$

#### Triode Connection:<sup>b</sup>

Grid No.1 to plate. . . . . 1.4  $\mu\text{mf}$

Grid No.1 to cathode. . . . . 1.4  $\mu\text{mf}$

Plate to cathode. . . . . 0.85  $\mu\text{mf}$

#### Characteristics, Class A<sub>1</sub> Amplifier:

|                                                    | Triode<br>Connection <sup>b</sup> |        | Pentode<br>Connection             |                  |
|----------------------------------------------------|-----------------------------------|--------|-----------------------------------|------------------|
| Plate Voltage . . . . .                            | 100                               | 250    | 250                               | volts            |
| Grid No.3 . . . . .                                | -                                 | -      | Connected to cathode<br>at socket |                  |
| Grid-No.2 Voltage . . . . .                        | -                                 | -      | 100                               | volts            |
| Grid-No.1 Voltage . . . . .                        | -3                                | -8     | -3                                | volts            |
| Amplification Factor. . . . .                      | 21                                | 21     | -                                 |                  |
| Plate Resistance<br>(Approx.) . . . . .            | 0.017                             | 0.0137 | 2                                 | megohms          |
| Transconductance. . . . .                          | 1240                              | 1530   | 1000                              | $\mu\text{mhos}$ |
| Plate Current . . . . .                            | 2.2                               | 5.5    | 1.8                               | ma               |
| Grid-No.2 Current . . . . .                        | -                                 | -      | 0.4                               | ma               |
| Grid-No.1 Voltage<br>(Approx.) for plate . . . . . |                                   |        |                                   |                  |
| $\mu\text{a} = 10$ . . . . .                       | -                                 | -      | -8                                | volts            |

#### Mechanical:

|                                                         |                                                       |
|---------------------------------------------------------|-------------------------------------------------------|
| Operating Position. . . . .                             | Any                                                   |
| Maximum Overall Length. . . . .                         | 2-3/16"                                               |
| Maximum Seated Length. . . . .                          | 1-15/16"                                              |
| Length, Base Seat to Bulb Top (Excluding tip) . . . . . | 1-9/16" $\pm$ 3/32"                                   |
| Diameter. . . . .                                       | 0.750" to 0.875" <span style="float: right;">←</span> |
| Dimensional Outline . . . . .                           | See General Section                                   |
| Bulb. . . . .                                           | T6-1/2                                                |
| Base. . . . .                                           | Small-Button Noval 9-Pin (JEDEC No.E9-1)              |

← Indicates a change.



Basing Designation for BOTTOM VIEW. . . . . 9AD

Pin 1—Grid No.1  
Pin 2—No Connection  
Pin 3—Cathode  
Pin 4—Heater  
Pin 5—Heater



Pin 6—No Connection  
Pin 7—Grid No.2  
Pin 8—Plate  
Pin 9—Grid No.3

### AMPLIFIER — Class A<sub>1</sub>

→ **Maximum Ratings, Design-Maximum Values:**

|                                      | Triode<br>Connection <sup>b</sup> | Pentode<br>Connection        |
|--------------------------------------|-----------------------------------|------------------------------|
| PLATE VOLTAGE. . . . .               | 275 max.                          | 330 max. volts               |
| GRID No.3 (SUPPRESSOR GRID). . . . . | —                                 | Connect to cathode at socket |

GRID-No.2 (SCREEN-GRID)

|                            |   |                     |
|----------------------------|---|---------------------|
| SUPPLY VOLTAGE. . . . .    | — | 330 max. volts      |
| GRID-No.2 VOLTAGE. . . . . | — | See Grid-No.2 Input |

*Rating Chart at front of Receiving Tube Section*

GRID-No.1 (CONTROL-GRID)

VOLTAGE:

|                              |         |               |
|------------------------------|---------|---------------|
| Negative-bias value. . . . . | 55 max. | 55 max. volts |
| Positive-bias value. . . . . | 0 max.  | 0 max. volts  |

GRID-No.2 INPUT:

|                                                 |   |                |
|-------------------------------------------------|---|----------------|
| For grid-No.2 voltages up to 165 volts. . . . . | — | 0.25 max. watt |
|-------------------------------------------------|---|----------------|

For grid-No.2 voltages between 165 and

|                    |   |                     |
|--------------------|---|---------------------|
| 330 volts. . . . . | — | See Grid-No.2 Input |
|--------------------|---|---------------------|

*Rating Chart at front of Receiving Tube Section*

|                            |          |                 |
|----------------------------|----------|-----------------|
| PLATE DISSIPATION. . . . . | 1.7 max. | 1.25 max. watts |
|----------------------------|----------|-----------------|

PEAK HEATER-CATHODE VOLTAGE:

|                                                  |          |                |
|--------------------------------------------------|----------|----------------|
| Heater negative with respect to cathode. . . . . | 100 max. | 100 max. volts |
| Heater positive with respect to cathode. . . . . | 100 max. | 100 max. volts |

### Typical Operation as Resistance-Coupled Amplifier:

See *RESISTANCE-COUPLED-AMPLIFIER CHARTS No.26 & No.27*  
at front of this Section

### Maximum Circuit Values:

|                              | Triode<br>Connection <sup>b</sup> | Pentode<br>Connection |
|------------------------------|-----------------------------------|-----------------------|
| Grid-No.1—Circuit Resistance | 2.2 max.                          | 2.2 max. megohms      |

<sup>a</sup> without external shield.

<sup>b</sup> Grid No.3 and grid No.2 connected to plate.

→ Indicates a change.



## OPERATING CONSIDERATIONS

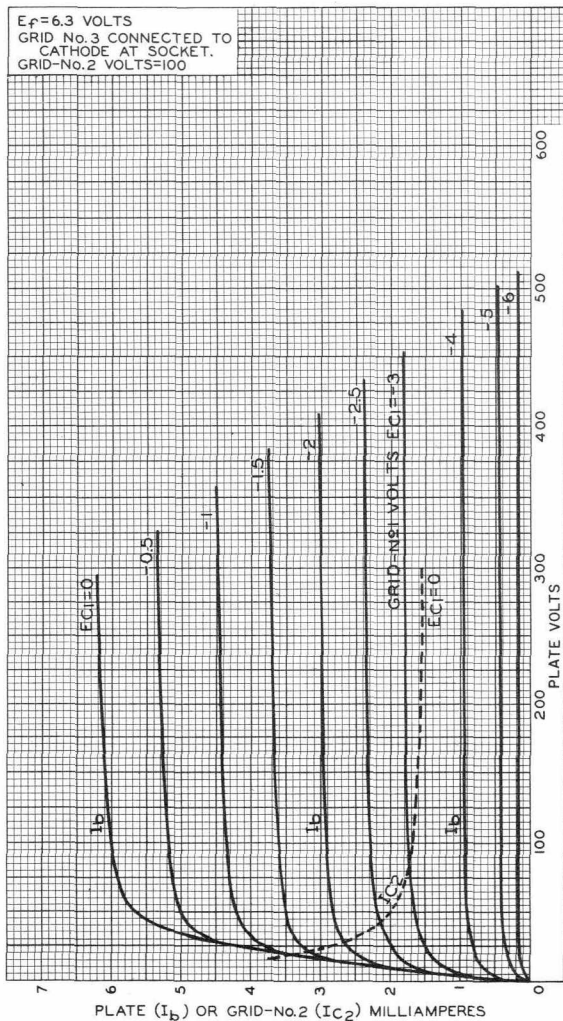


It is recommended that pins 2 and 6 be grounded in all applications. Grounding of these pins will effectively shield grid No. 1 and plate from heater and help to reduce hum level when an ac heater supply is used.

← Indicates a change.



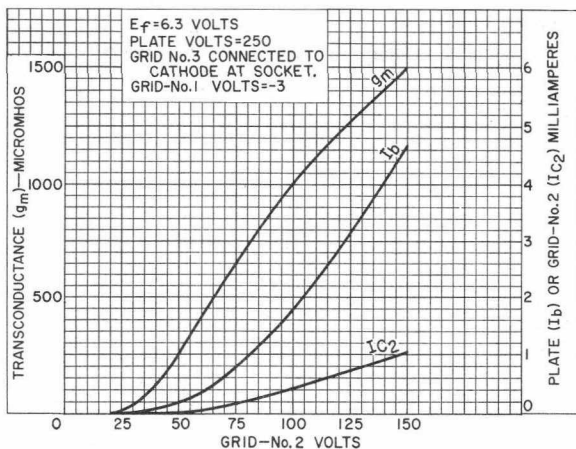
# AVERAGE CHARACTERISTICS Pentode Connection



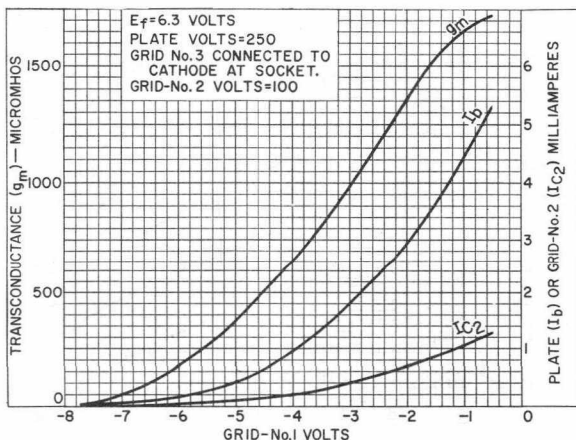
92CM - 7439RI



# AVERAGE CHARACTERISTICS Pentode Connection



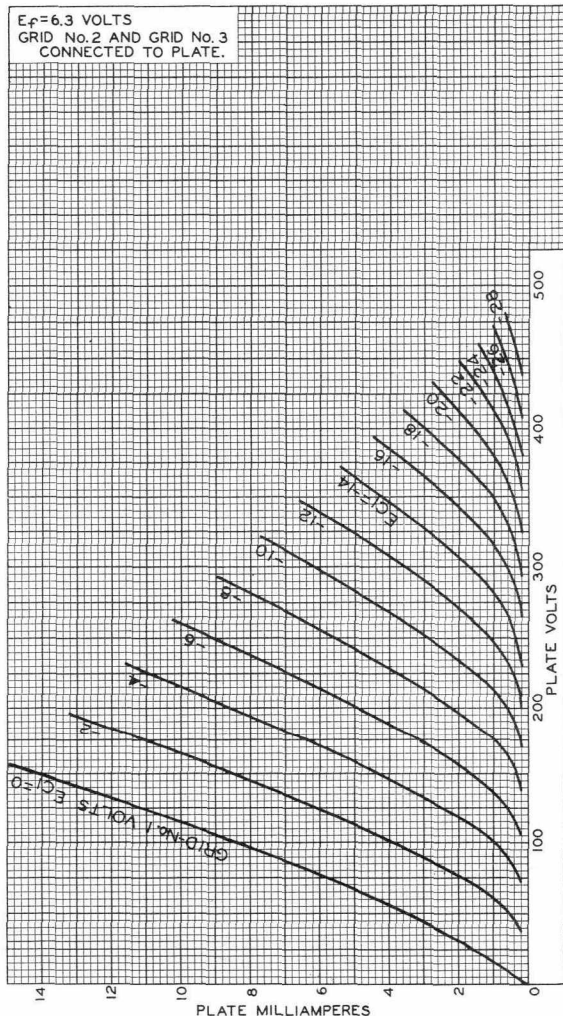
92CS-11053



92CS-11052



# AVERAGE PLATE CHARACTERISTICS Triode Connection



92CM-7446

