

# Medium-Mu Triode— Sharp-Cutoff Pentode

## 9-PIN MINIATURE TYPE

For High-Fidelity Audio-Amplifier Ap-  
plications Critical as to Noise and Hum

### GENERAL DATA

#### Electrical:

##### Heater Characteristics and Ratings:

Voltage (AC or DC) . . . . .  $6.3 \pm 0.6$  volts

Current at heater volts = 6.3 . . . . . 0.450 amp

Peak heater-cathode voltage (Each  
Unit):

Heater negative with  
respect to cathode . . . . . 200 max. volts

Heater positive with  
respect to cathode . . . . . 200<sup>a</sup> max. volts

##### Direct Interelectrode Capacitances:<sup>b</sup>

##### Triode Unit:

Grid to plate . . . . . 2 pf

Grid to cathode and heater . . . . . 2.3 pf

Plate to cathode and heater . . . . . 0.3 pf

##### Pentode Unit:

Grid No.1 to plate . . . . . 0.06 max. pf

Grid No.1 to cathode & internal  
shield & grid No.3, grid No.2,  
and heater . . . . . 5 pf

Plate to cathode & internal shield  
& grid No.3, grid No.2, and  
heater . . . . . 2 pf

##### Equivalent-Hum and Noise Voltage (Referenced to Grid):

##### Triode Unit

Average Value (RMS) . . . . . 10 microvolts

Maximum Value (RMS) . . . . . 50 microvolts

Measured in "true rms" units under the following conditions:  
heater volts = 6.3 ac, center-tap of heater transformer con-  
nected to ground, plate-supply volts = 250, plate load resis-  
tor (megohms) = 0.1, cathode resistor (ohms) unbypassed = 1500,  
grid resistor (megohms) = 0.05, and amplifier covering fre-  
quency range between 25 and 10,000 cps.

##### Pentode Unit

Average Value (RMS) . . . . . 15 microvolts

Maximum Value (RMS) . . . . . 35 microvolts

Measured in "true rms" units under the following conditions:  
heater volts = 6.3 ac, center-tap of heater transformer con-  
nected to ground, plate-supply volts = 250, plate-load resis-  
tor (megohms) = 0.22, grid-No.2 supply volts = 250; grid No.2  
voltage divider: resistor (megohm) from grid No.2 to B+ = 0.68,  
resistor (megohm) from grid-No.2 to ground = 0.33; bypass ca-

← Indicates a change.



pacitor ( $\mu$ f) from grid No.2 to cathode = 0.1; cathode resistor (ohms unbypassed) = 680; grid No.1 resistor (megohm) = 0.27; and amplifier covering frequency range between 25 and 10,000 cps.

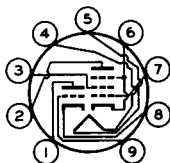
### Characteristics, Class A<sub>1</sub> Amplifier:

|                                                                 | Triode<br>Unit | Pentode<br>Unit |           |
|-----------------------------------------------------------------|----------------|-----------------|-----------|
| Plate-Supply Voltage. . . . .                                   | 215            | 100 220         | volts     |
| Grid-No.2 Supply Voltage. . . .                                 | —              | 50 130          | volts     |
| Grid-No.1 Voltage. . . . .                                      | -8.5           | —               | volts     |
| Cathode Resistor. . . . .                                       | —              | 1000 62         | ohms      |
| Amplification Factor. . . . .                                   | 17             | —               | —         |
| Plate Resistance (Approx.). . .                                 | 0.0081         | 1 0.4           | megohm    |
| Transconductance. . . . .                                       | 2100           | 1500 7000       | $\mu$ mos |
| Plate Current. . . . .                                          | 9              | 1.1 12.5        | ma        |
| Grid-No.2 Current. . . . .                                      | —              | 0.35 3.5        | ma        |
| Grid-No.1 Voltage (Approx.) for<br>plate $\mu$ a = 10 . . . . . | -40            | -4 —            | volts     |

### Mechanical:

|                                                         |                                          |
|---------------------------------------------------------|------------------------------------------|
| Operating Position. . . . .                             | Any                                      |
| Type of Cathodes. . . . .                               | Coated Unipotential                      |
| 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"                         |
| Dimensional Outline. . . . .                            | See General Section                      |
| Bulb. . . . .                                           | T6-1/2                                   |
| Base. . . . .                                           | Small-Button Noval 9-Pin (JEDEC No.E9-1) |
| Basing Designation for BOTTOM VIEW. . . . .             | 9JT                                      |

- Pin 1—Triode  
Plate  
Pin 2—Pentode  
Plate  
Pin 3—Pentode  
Grid No.2  
Pin 4—Heater  
Pin 5—Heater



- Pin 6—Pentode  
Cathode,  
Grid No.3,  
Internal  
Shield  
Pin 7—Pentode  
Grid No.1  
Pin 8—Triode  
Cathode  
Pin 9—Triode  
Grid

### AMPLIFIER — Class A<sub>1</sub>

#### Maximum Ratings, Design-Maximum Values:

|                                                                   | Triode<br>Unit | Pentode<br>Unit     |       |
|-------------------------------------------------------------------|----------------|---------------------|-------|
| PLATE VOLTAGE. . . . .                                            | 330 max.       | 330 max.            | volts |
| GRID-No.2 (SCREEN-GRID)<br>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:<br>Positive-bias value. . . . . | 0 max.         | 0 max.              | volts |

|                                                                  | <i>Triode<br/>Unit</i> | <i>Pentode<br/>Unit</i>                                                        |       |
|------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------|-------|
| GRID-No.2 INPUT:                                                 |                        |                                                                                |       |
| For grid-No.2 voltages<br>up to 165 volts . . . .                | -                      | 0.6 max.                                                                       | watt  |
| For grid-No.2 voltages<br>between 165 and 330<br>volts . . . . . | -                      | See <i>Grid-No.2 Input<br/>Rating Chart</i> at front of Receiving Tube Section |       |
| PLATE DISSIPATION . . . . .                                      | 2.4 max.               | 3 max.                                                                         | watts |

**Maximum Circuit Values:**

|                                               | <i>Triode<br/>Unit</i> | <i>Pentode<br/>Unit</i> |        |
|-----------------------------------------------|------------------------|-------------------------|--------|
| Grid-No.1-Circuit<br>Resistance: <sup>c</sup> |                        |                         |        |
| For fixed-bias<br>operation . . . . .         | 0.5 max.               | 0.25 max.               | megohm |
| For cathode-bias<br>operation . . . . .       | 1 max.                 | 1 max.                  | megohm |

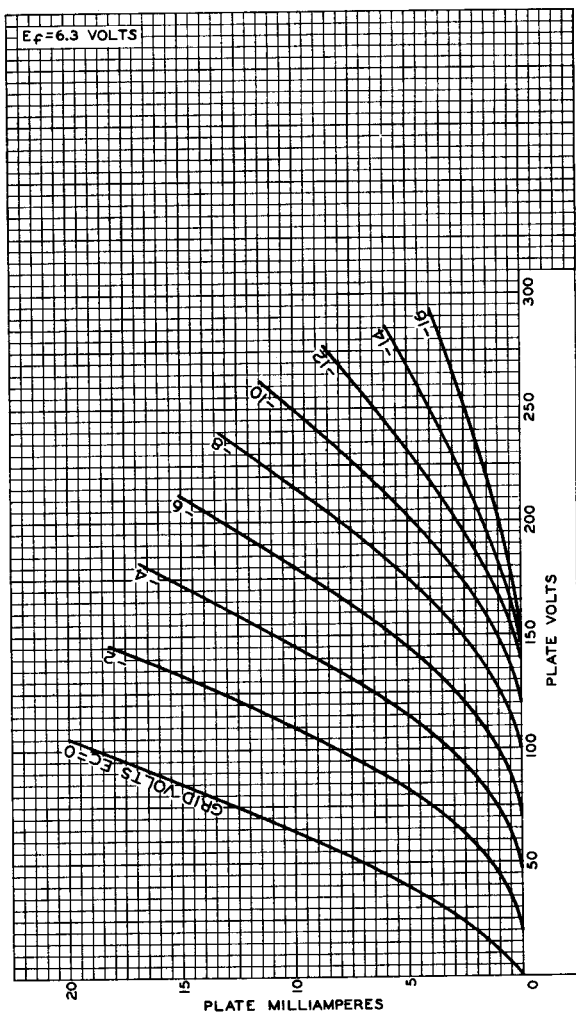
<sup>a</sup> The dc component must not exceed 100 volts.

<sup>b</sup> Without external shield.

<sup>c</sup> If either unit is operated at maximum rated conditions, grid-No.1-circuit resistances for both units should not exceed the stated values.



# AVERAGE PLATE CHARACTERISTICS Triode Unit

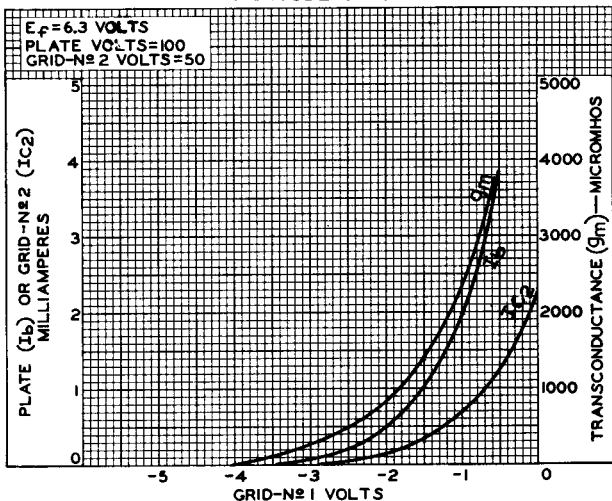


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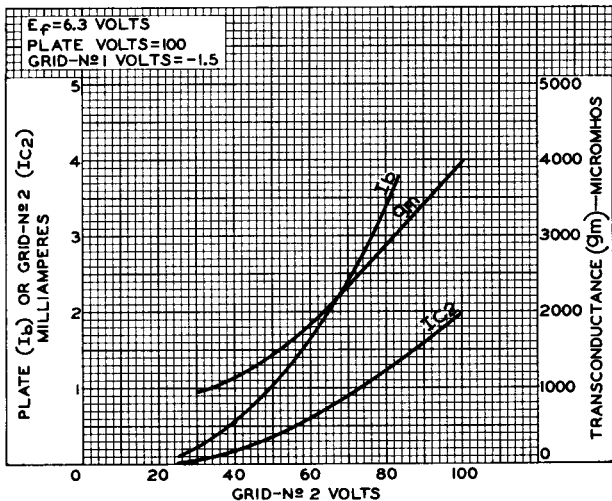


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AVERAGE CHARACTERISTICS  
PENTODE UNIT

92CS-9702



92CS-9703