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# MEDIUM-MU TRIODE — SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

*Intended for use in equipment having  
series heater-string arrangement*

## GENERAL DATA

### Electrical:

Heater, for Unipotential Cathodes:

|                                 |     |           |                |
|---------------------------------|-----|-----------|----------------|
| Voltage . . . . .               | 6.3 | . . . . . | ac or dc volts |
| Current . . . . .               | 0.6 | . . . . . | amp            |
| Warm-up time (Average). . . . . | 11  | . . . . . | sec            |

*For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.*

Direct Interelectrode Capacitances (Approx.):

|                                                                                             | Without<br>External<br>Shield | With<br>External<br>Shield <sup>o</sup> |                  |
|---------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------|------------------|
| <b>Triode Unit:</b>                                                                         |                               |                                         |                  |
| Grid to plate . . . . .                                                                     | 2.2                           | 2.2                                     | $\mu\mu\text{f}$ |
| Grid to cathode and<br>heater. . . . .                                                      | 2.5                           | 2.7                                     | $\mu\mu\text{f}$ |
| Plate to cathode and<br>heater. . . . .                                                     | 0.4                           | 1.9                                     | $\mu\mu\text{f}$ |
| <b>Pentode Unit:</b>                                                                        |                               |                                         |                  |
| Grid No.1 to plate. . . . .                                                                 | 0.04                          | 0.03                                    | $\mu\mu\text{f}$ |
| Grid No.1 to cathode &<br>grid No.3 & internal<br>shield, grid No.2,<br>and heater. . . . . | 10                            | 10                                      | $\mu\mu\text{f}$ |
| Plate to cathode &<br>grid No.3 & internal<br>shield, grid No.2,<br>and heater. . . . .     | 3.6                           | 4.5                                     | $\mu\mu\text{f}$ |
| Triode grid to pentode<br>plate . . . . .                                                   | 0.016                         | 0.006                                   | $\mu\mu\text{f}$ |
| Pentode grid No.1 to<br>triode plate. . . . .                                               | 0.006                         | 0.003                                   | $\mu\mu\text{f}$ |
| Pentode plate to<br>triode plate. . . . .                                                   | 0.15                          | 0.023                                   | $\mu\mu\text{f}$ |

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

|                                         | Triode Unit | Pentode Unit |             |
|-----------------------------------------|-------------|--------------|-------------|
| Plate-Supply Voltage. . .               | 200         | 65           | 200 volts   |
| Grid-No.2 Supply Voltage.               | —           | 150          | 150 volts   |
| Grid-No.1 Voltage . . . .               | —8          | 0            | 0 volts     |
| Cathode Resistor. . . . .               | —           | —            | 180 ohms    |
| Amplification Factor. . .               | 18          | —            | —           |
| Plate Resistance<br>(Approx.) . . . . . | 6700        | —            | 400000 ohms |

<sup>o</sup> With external shield JETEC No.315 connected to cathode of unit under test.



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|                                                                             | <i>Triode Unit</i> | <i>Pentode Unit</i> |                 |
|-----------------------------------------------------------------------------|--------------------|---------------------|-----------------|
| Transconductance . . . . .                                                  | 2700               | —                   | 9000 $\mu$ mhos |
| Plate Current. . . . .                                                      | 8                  | 42*                 | 13 ma           |
| Grid-No.2 Current. . . . .                                                  | —                  | 12.5*               | 3.5 ma          |
| Grid-No.1 Voltage<br>(Approx.) for plate<br>current of 10 $\mu$ a . . . . . | -16                | —                   | -10 volts       |

## **Mechanical:**

|                                                        |                                          |
|--------------------------------------------------------|------------------------------------------|
| Mounting Position. . . . .                             | Any                                      |
| Maximum Overall Length . . . . .                       | 2-5/8"                                   |
| Maximum Seated Length. . . . .                         | 2-3/8"                                   |
| Length, Base Seat to Bulb-Top (Excluding tip). . . . . | 2" $\pm$ 3/32"                           |
| Maximum Diameter . . . . .                             | 7/8"                                     |
| Dimensional Outline. . . . .                           | See General Section                      |
| Bulb . . . . .                                         | T6-1/2                                   |
| Base . . . . .                                         | Small-Button Noval 9-Pin (JETEC No.E9-1) |
| Basing Designation for BOTTOM VIEW . . . . .           | .9DX                                     |

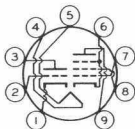
Pin 1—Triode  
Cathode

Pin 2—Triode  
Grid

Pin 3—Triode  
Plate

Pin 4—Heater

Pin 5—Heater



Pin 6—Pentode  
Cathode,  
Grid No.3,  
Internal  
Shield

Pin 7—Pentode  
Grid No.1

Pin 8—Pentode  
Grid No.2

Pin 9—Pentode  
Plate

## **AMPLIFIER - Class A<sub>1</sub>**

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

|                                                        | <i>Triode Unit</i> | <i>Pentode Unit</i> |       |
|--------------------------------------------------------|--------------------|---------------------|-------|
| PLATE VOLTAGE . . . . .                                | 300 max.           | 300 max.            | volts |
| GRID-No.2 (SCREEN-GRID)<br>SUPPLY VOLTAGE. . . . .     | —                  | 300 max.            | volts |
| GRID-No.2 VOLTAGE . . . . .                            | —                  | See Grid-No.2 Input |       |
| <i>Rating Chart at front of Receiving Tube Section</i> |                    |                     |       |
| GRID-No.1 (CONTROL-GRID)<br>VOLTAGE:                   |                    |                     |       |
| Negative bias value . . . . .                          | —                  | 50 max.             | volts |
| Positive bias value . . . . .                          | —                  | 0 max.              | volts |
| PLATE DISSIPATION . . . . .                            | 2 max.             | 3.25 max.           | watts |
| GRID-No.2 INPUT:                                       |                    |                     |       |
| For grid-No.2 voltages<br>up to 150 volts . . . . .    | —                  | 1 max.              | watt  |

\* These values can be measured by a method involving a recurrent wave form such that the grid-No.2 input will be kept within ratings in order to prevent damage to the tube.



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|                                                                  | Triode Unit           | Pentode Unit          |                                                                        |
|------------------------------------------------------------------|-----------------------|-----------------------|------------------------------------------------------------------------|
| For grid-No.2 voltages<br>between 150 and 300<br>volts . . . . . | -                     |                       | See Grid-No.2 Input Rating<br>Chart at front of Receiving Tube Section |
| PEAK HEATER-CATHODE<br>VOLTAGE:                                  |                       |                       |                                                                        |
| Heater negative with<br>respect to cathode. .                    | 200 max.              | 200 max.              | volts                                                                  |
| Heater positive with<br>respect to cathode. .                    | 200 <sup>▲</sup> max. | 200 <sup>▲</sup> max. | volts                                                                  |
| Maximum Circuit Values:                                          |                       |                       |                                                                        |
|                                                                  | Triode Unit           | Pentode Unit          |                                                                        |
| Grid-No.1-Circuit<br>Resistance:                                 |                       |                       |                                                                        |
| For fixed-bias<br>operation . . . . .                            | 0.5 max.              | 0.25 max.             | megohm                                                                 |
| For cathode-bias<br>operation . . . . .                          | 1.0 max.              | 1.0 max.              | megohm                                                                 |

▲ The dc component must not exceed 100 volts.

## OPERATING CONSIDERATIONS

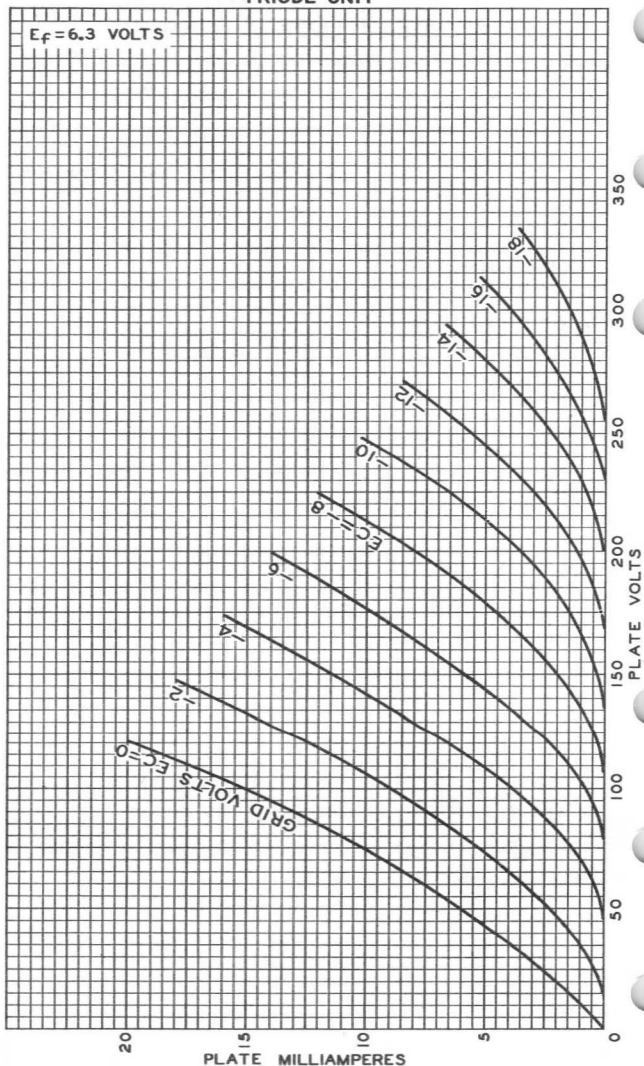
Because the internal shield is connected to the cathode and grid No.3, the impedance in the cathode circuit should be kept as low as possible to minimize cross-coupling effects.

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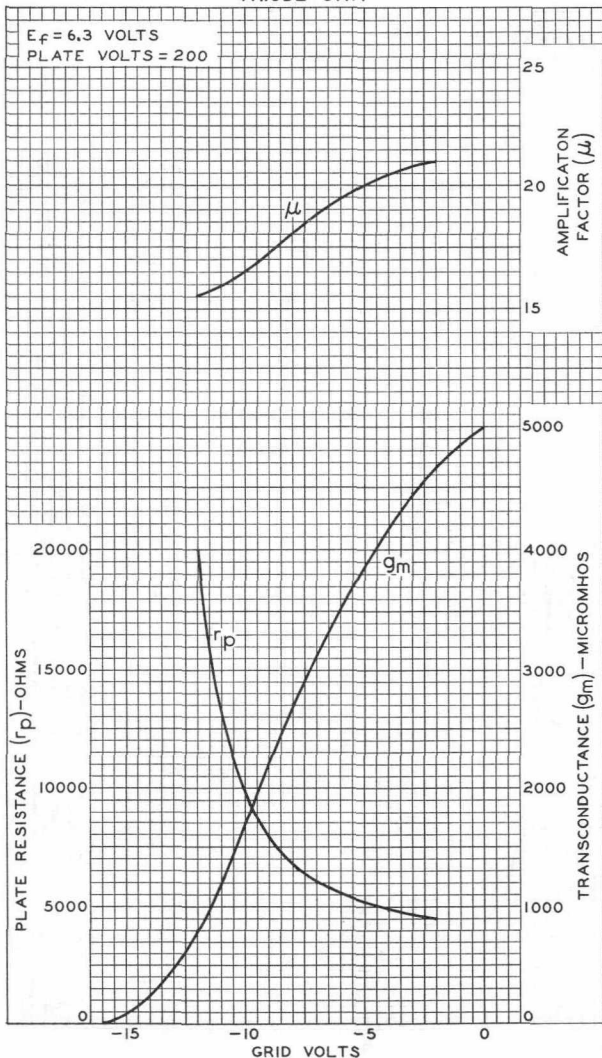
AVERAGE PLATE CHARACTERISTICS  
TRIODE UNIT





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# 6BA8-A AVERAGE CHARACTERISTICS TRIODE UNIT

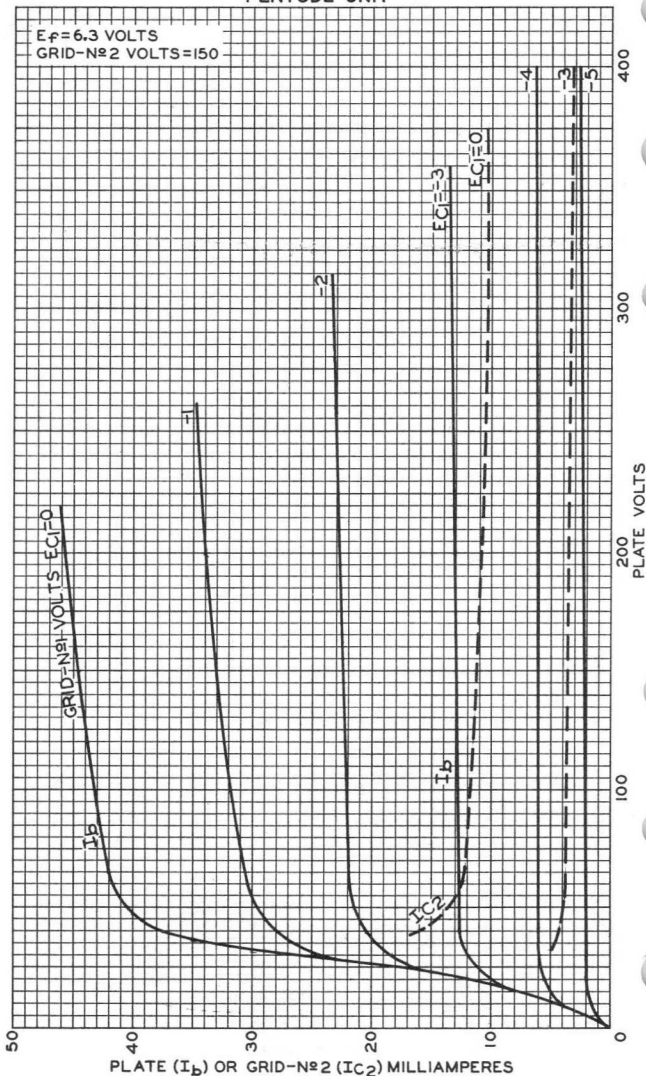


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# AVERAGE CHARACTERISTICS PENTODE UNIT



ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9173



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# AVERAGE CHARACTERISTICS PENTODE UNIT

