

# 7034/4X150A

## Beam Power Tube

FORCED-AIR COOLED

COAXIAL-ELECTRODE STRUCTURE 370 WATTS CW OUTPUT UP TO 150 Mc  
 UNIPOTENTIAL CATHODE 140 WATTS CW OUTPUT AT 500 Mc  
 COMPACT DESIGN INTEGRAL RADIATOR

For Use at Frequencies up to 500 Mc

### GENERAL DATA

#### Electrical:

Heater, for Unipotential Cathode:

Voltage (AC or DC)<sup>a</sup> . . . . . 6.0 ± 10% volts  
 Current at heater volts = 6.0 . . . . . 2.6 amp  
 Minimum heating time. . . . . 30 sec

Mu-Factor, Grid No.2 to Grid No.1,  
 for grid-No.2 volts = 300 and  
 grid-No.2 ma. = 50. . . . . 5

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

Grid No.1 to plate. . . . . 0.03 μf  
 Grid No.1 to cathode, grid No.2,  
 and heater. . . . . 16 μf  
 Plate to cathode, grid No.2,  
 and heater. . . . . 4.4 μf

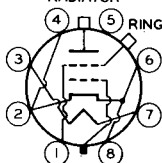
#### Mechanical:

Operating Position. . . . . Any  
 Maximum Overall Length. . . . . 2.404"  
 Maximum Seated Length . . . . . 1.850"  
 Maximum Diameter. . . . . 1.640"  
 Weight (Approx.). . . . . 4 oz  
 Radiator. . . . . Integral part of tube  
 Socket. . . . . Air-System Socket, such as  
 Johnson No.124-110-1<sup>c</sup>  
 (Supplied with Air Chimney)  
 Base. . . . . Special 8-Pin

#### BOTTOM VIEW

#### RADIATOR

Pin 1 - Grid No.2<sup>d</sup>  
 Pin 2 - Cathode  
 Pin 3 - Heater  
 Pin 4 - Cathode  
 Pin 5 - Do Not Use  
 Pin 6 - Cathode  
 Pin 7 - Heater



Pin 8 - Cathode  
 Base Index Plug -  
 Grid No.1  
 Radiator - Plate  
 Ring Terminal<sup>e</sup> -  
 Grid No.2

#### Air Flow:

*Through indicated air-system socket*—This fitting directs the air over the base seals; past the grid-No.2 seal, glass envelope, and plate seal; and through the radiator to provide effective cooling with minimum air flow. When the tube is operated at maximum plate dissipation for each class of service, a minimum air flow of 5.6 cfm

← Indicates a change.



# 7034/4X150A

through the system is required. The corresponding pressure drop is 0.45 inch of water. These requirements are for operation at sea level and at an ambient temperature of 20° C. At higher altitudes and ambient temperatures, the air flow must be increased to maintain the respective seal temperatures and the plate temperature within maximum ratings.

**Without air-system socket**—If an air-system socket is not used, it is essential that adequate cooling air be directed over the base seals, past the envelope, and through the radiator. Under these conditions and with the tube operating at maximum plate dissipation for each class of service, a minimum air flow of 5.3 cfm must pass through the radiator. The corresponding pressure drop is 0.28 inch of water. These requirements are for operation at sea level and at an ambient temperature of 20° C. At higher altitudes and ambient temperatures, the air flow must be increased to maintain the respective seal temperatures and the plate temperature within maximum ratings.

|   |          |    |
|---|----------|----|
| Plate Temperature (Measured on base end of plate surface at junction with fins) . . . . . | 250 max. | °C |
| Temperature of Plate Seal . . . . .   | 200 max. | °C |
| Temperature of Base Seals and Grid-No.2 Seal . . . . .                                    | 175 max. | °C |

## AF POWER AMPLIFIER & MODULATOR — Class AB<sub>1</sub><sup>f</sup>

**Maximum CCS<sup>g</sup> Ratings, Absolute-Maximum Values:**

|   |           |       |
|---|-----------|-------|
| DC PLATE VOLTAGE . . . . .                          | 2000 max. | volts |
| DC GRID-No.2 (SCREEN-GRID) VOLTAGE . . . . .        | 400 max.  | volts |
| MAX.-SIGNAL DC PLATE CURRENT <sup>h</sup> . . . . . | 250 max.  | ma    |
| GRID-No.2 INPUT <sup>h</sup> . . . . .              | 12 max.   | watts |
| PLATE DISSIPATION <sup>h</sup> . . . . .            | 250 max.  | watts |
| PEAK HEATER-CATHODE VOLTAGE:                        |           |       |
| Heater negative with respect to cathode. . . . .    | 150 max.  | volts |
| Heater positive with respect to cathode. . . . .    | 150 max.  | volts |

### Typical CCS Operation:

*Values are for 2 tubes*

|  |     |      |      |      |       |
|--|-----|------|------|------|-------|
| DC Plate Voltage . . . . .                       | 800 | 1000 | 1500 | 2000 | volts |
| DC Grid-No.2 Voltage . . . . .                   | 300 | 300  | 300  | 300  | volts |
| DC Grid-No.1 (Control-Grid) Voltage . . . . .    | -40 | -43  | -50  | -50  | volts |
| Peak AF Grid-No.1-to-Grid-No.1 Voltage . . . . . | 80  | 86   | 100  | 100  | volts |
| Zero-Signal DC Plate Current . . . . .           | 210 | 165  | 100  | 100  | ma    |
| Max.-Signal DC Plate Current . . . . .           | 435 | 450  | 456  | 470  | ma    |
| Zero-Signal DC Grid-No.2 Current . . . . .       | 0   | 0    | 0    | 0    | ma    |
| Max.-Signal DC Grid-No.2 Current . . . . .       | 76  | 52   | 42   | 36   | ma    |



# 7034/4X150A

|   |      |      |      |      |       |
|---|------|------|------|------|-------|
| Effective Load Resistance<br>(Plate to plate) . . . . . | 4400 | 4250 | 6570 | 8760 | ohms  |
| Max.-Signal Driving Power<br>(Approx.) . . . . .        | 0    | 0    | 0    | 0    | watts |
| Max.-Signal Power Output<br>(Approx.) . . . . .         | 170  | 230  | 400  | 580  | watts |

## Maximum Circuit Values:

|   |          |        |
|---|----------|--------|
| Grid-No.1-Circuit Resistance (Per tube) . . . . . | 0.1 max. | megohm |
|---|----------|--------|

## AF POWER AMPLIFIER & MODULATOR — Class AB<sub>2</sub><sup>j</sup>

### Maximum CCS<sup>g</sup> Ratings, Absolute-Maximum Values:

|   |           |       |
|---|-----------|-------|
| DC PLATE VOLTAGE. . . . .                           | 2000 max. | volts |
| DC GRID-No.2 (SCREEN-GRID) VOLTAGE. . . . .         | 400 max.  | volts |
| MAX.-SIGNAL DC PLATE CURRENT <sup>h</sup> . . . . . | 250 max.  | ma    |
| GRID-No.2 INPUT <sup>h</sup> . . . . .              | 12 max.   | watts |
| PLATE DISSIPATION <sup>h</sup> . . . . .            | 250 max.  | watts |
| GRID-No.1 (CONTROL-GRID) INPUT. . . . .             | 2 max.    | watts |
| PEAK HEATER-CATHODE VOLTAGE:                        |           |       |
| Heater negative with respect to cathode. . . . .    | 150 max.  | volts |
| Heater positive with respect to cathode . . . . .   | 150 max.  | volts |

### Typical CCS Operation:

*Values are for 2 tubes*

|  |      |      |      |      |       |
|--|------|------|------|------|-------|
| DC Plate Voltage. . . . .                              | 800  | 1000 | 1500 | 2000 | volts |
| DC Grid-No.2 Voltage. . . . .                          | 300  | 300  | 300  | 300  | volts |
| DC Grid-No.1 Voltage. . . . .                          | -40  | -45  | -50  | -50  | volts |
| Peak AF Grid-No.1-to-                                  |      |      |      |      |       |
| Grid-No.1 Voltage . . . . .                            | 90   | 98   | 106  | 106  | volts |
| Zero-Signal DC Plate Current. . . . .                  | 210  | 166  | 100  | 100  | ma    |
| Max.-Signal DC Plate Current. . . . .                  | 500  | 493  | 500  | 500  | ma    |
| Zero-Signal DC Grid-No.2                               |      |      |      |      |       |
| Current . . . . .                                      | 0    | 0    | 0    | 0    | ma    |
| Max.-Signal DC Grid-No.2                               |      |      |      |      |       |
| Current . . . . .                                      | 80   | 58   | 46   | 36   | ma    |
| Effective Load Resistance<br>(Plate to plate). . . . . | 3140 | 3950 | 5970 | 8100 | ohms  |
| Max.-Signal Driving Power<br>(Approx.) . . . . .       | 0.15 | 0.15 | 0.2  | 0.2  | watt  |
| Max.-Signal Power Output<br>(Approx.) . . . . .        | 215  | 270  | 440  | 630  | watts |

## RF POWER AMPLIFIER — Class B Television Service

*Synchronizing-level conditions per tube unless otherwise specified*

### Maximum CCS<sup>g</sup> Ratings, Absolute-Maximum Values:

*54 to 216 Mc*

|   |           |       |
|---|-----------|-------|
| DC PLATE VOLTAGE. . . . .                         | 1250 max. | volts |
| DC GRID-No.2 (SCREEN-GRID) VOLTAGE. . . . .       | 400 max.  | volts |
| DC GRID-No.1 (CONTROL-GRID) VOLTAGE . . . . .     | -250 max. | volts |
| DC PLATE CURRENT (AVERAGE) <sup>k</sup> . . . . . | 250 max.  | ma    |



# 7034/4X150A

|  |          |       |
|--|----------|-------|
| GRID-No.2 INPUT . . . . .                  | 12 max.  | watts |
| GRID-No.1 INPUT . . . . .                  | 2 max.   | watts |
| PLATE DISSIPATION . . . . .                | 250 max. | watts |
| PEAK HEATER-CATHODE VOLTAGE:               |          |       |
| Heater negative with respect to cathode. . | 150 max. | volts |
| Heater positive with respect to cathode. . | 150 max. | volts |

## Typical CCS Operation:

*With bandwidth of 5 Mc*

|   |      |      |      |       |
|---|------|------|------|-------|
| DC Plate Voltage. . . . .                   | 750  | 1000 | 1250 | volts |
| DC Grid-No.2 Voltage. . . . .               | 200  | 300  | 300  | volts |
| DC Grid-No.1 Voltage. . . . .               | -60  | -65  | -70  | volts |
| Peak RF Grid-No.1 Voltage:                  |      |      |      |       |
| Synchronizing level . . . . .               | 85   | 95   | 100  | volts |
| Pedestal level. . . . .                     | 65   | 70   | 75   | volts |
| DC Plate Current:                           |      |      |      |       |
| Synchronizing level . . . . .               | 335  | 330  | 305  | ma    |
| Pedestal level. . . . .                     | 245  | 240  | 230  | ma    |
| DC Grid-No.2 Current:                       |      |      |      |       |
| Synchronizing level . . . . .               | 50   | 45   | 45   | ma    |
| Pedestal level. . . . .                     | 20   | 15   | 10   | ma    |
| DC Grid-No.1 Current:                       |      |      |      |       |
| Synchronizing level . . . . .               | 15   | 20   | 25   | ma    |
| Pedestal level. . . . .                     | 4    | 4    | 4    | ma    |
| Driver Power Output (Approx.): <sup>†</sup> |      |      |      |       |
| Synchronizing level . . . . .               | 7    | 8    | 9    | watts |
| Pedestal level. . . . .                     | 4.25 | 4.7  | 5.5  | watts |
| Useful Power Output (Approx.):              |      |      |      |       |
| Synchronizing level . . . . .               | 135  | 200  | 250  | watts |
| Pedestal level. . . . .                     | 75   | 110  | 140  | watts |

## LINEAR RF POWER AMPLIFIER

### Single-Sideband Suppressed-Carrier Service

#### Maximum Ratings, Absolute-Maximum Values:

|  | Up to 150 Mc     |                   | Up to 500 Mc     |       |
|--|------------------|-------------------|------------------|-------|
|  | CCS <sup>g</sup> | ICAS <sup>m</sup> | CCS <sup>g</sup> |       |
| DC PLATE VOLTAGE. .                                | 2000 max.        | 2250 max.         | 1250 max.        | volts |
| DC GRID-No.2<br>(SCREEN-GRID)<br>VOLTAGE . . . . . | 400 max.         | 400 max.          | 400 max.         | volts |
| MAX.-SIGNAL DC                                     |                  |                   |                  |       |
| PLATE CURRENT . .                                  | 250 max.         | 280 max.          | 250 max.         | ma    |
| GRID-No.2 INPUT . .                                | 12 max.          | 12 max.           | 12 max.          | watts |
| PLATE DISSIPATION .                                | 250 max.         | 250 max.          | 300 max.         | watts |
| PEAK HEATER-                                       |                  |                   |                  |       |
| CATHODE VOLTAGE:                                   |                  |                   |                  |       |
| Heater negative<br>with respect<br>to cathode. . . | 150 max.         | 150 max.          | 150 max.         | volts |
| Heater positive<br>with respect<br>to cathode. . . | 150 max.         | 150 max.          | 150 max.         | volts |

→ indicates a change.



# 7034/4X150A

## Typical Class AB<sub>1</sub> "Single-Tone" Operation up to 150 Mc:<sup>n</sup> ←

|   | CCS <sup>g</sup> |      |      | ICAS <sup>m</sup> |       |
|---|------------------|------|------|-------------------|-------|
| DC Plate Voltage . . . . .                      | 1000             | 1500 | 1800 | 2000              | volts |
| DC Grid-No.2 Voltage <sup>p</sup> . . . . .     | 300              | 300  | 300  | 300               | volts |
| DC Grid-No.1 (Control-Grid) Voltage . . . . .   | -50              | -50  | -50  | -48               | volts |
| Zero-Signal DC Plate Current . . . . .          | 50               | 50   | 50   | 60                | ma    |
| Zero-Signal DC Grid-No.2 Current . . . . .      | 0                | 0    | 0    | 0                 | ma    |
| Effective RF Load Resistance . . . . .          | 1860             | 3280 | 4140 | 4270              | ohms  |
| Max.-Signal DC Plate Current . . . . .          | 225              | 225  | 225  | 250               | ma    |
| Max.-Signal DC Grid-No.2 Current . . . . .      | 11               | 11   | 11   | 9                 | ma    |
| Max.-Signal Peak RF Grid-No.1 Voltage . . . . . | 50               | 50   | 50   | 48                | volts |
| Max.-Signal Driving Power (Approx.) . . . . .   | 0                | 0    | 0    | 0                 | watts |
| Max.-Signal Power Output (Approx.) . . . . .    | 115              | 200  | 250  | 290               | watts |

### Maximum Circuit Values (CCS or ICAS):

Grid-No.1-Circuit Resistance under Any Condition:

|                             |                 |      |
|-----------------------------|-----------------|------|
| With fixed bias . . . . .   | 25000 max.      | ohms |
| With cathode bias . . . . . | Not recommended |      |

### PLATE-MODULATED RF POWER AMPLIFIER — Class C Telephony

*Carrier conditions per tube for use with a max. modulation factor of 1*

### Maximum CCS<sup>g</sup> Ratings, Absolute-Maximum Values:

|   | Up to 150 Mc | 150 to 500 Mc |       |
|---|--------------|---------------|-------|
| DC PLATE VOLTAGE . . . . .                        | 1600 max.    | 1000 max.     | volts |
| DC GRID-No.2 (SCREEN-GRID) VOLTAGE . . . . .      | 300 max.     | 300 max.      | volts |
| DC GRID-No.1 (CONTROL-GRID) VOLTAGE . . . . .     | -250 max.    | -250 max.     | volts |
| DC PLATE CURRENT . . . . .                        | 200 max.     | 200 max.      | ma    |
| GRID-No.2 INPUT . . . . .                         | 10 max.      | 10 max.       | watts |
| GRID-No.1 INPUT . . . . .                         | 2 max.       | 2 max.        | watts |
| PLATE DISSIPATION . . . . .                       | 165 max.     | 165 max.      | watts |
| PEAK HEATER-CATHODE VOLTAGE:                      |              |               |       |
| Heater negative with respect to cathode . . . . . | 150 max.     | 150 max.      | volts |
| Heater positive with respect to cathode . . . . . | 150 max.     | 150 max.      | volts |

### Typical CCS Operation:

*Up to 150 Mc*

|   |      |      |       |
|---|------|------|-------|
| DC Plate Voltage . . . . .  | 1200 | 1600 | volts |
| DC Grid-No.2 Voltage (Modulated approx. 55%) <sup>q</sup> . . . . . | 250  | 250  | volts |

← Indicates a change.



# 7034/4X150A

|   |      |      |       |
|---|------|------|-------|
| DC Grid-No.1 Voltage <sup>r</sup> . . . . .                 | -118 | -118 | volts |
| Peak AF Grid-No.2 Voltage (For<br>100% modulation). . . . . | 180  | 200  | volts |
| Peak RF Grid-No.1 Voltage . . . . .                         | 136  | 136  | volts |
| DC Plate Current. . . . .                                   | 200  | 200  | ma    |
| DC Grid-No.2 Current. . . . .                               | 23   | 23   | ma    |
| DC Grid-No.1 Current (Approx.). . . . .                     | 5    | 5    | ma    |
| Driving Power (Approx.) . . . . .                           | 2    | 3    | watts |
| Power Output (Approx.). . . . .                             | 150  | 230  | watts |

*At 165 Mc*

|  |     |     |      |      |       |
|--|-----|-----|------|------|-------|
| DC Plate Voltage. . . . .  | 400 | 600 | 800  | 1000 | volts |
| DC Grid-No.2 Voltage<br>(Modulated approx. 55%) <sup>q</sup> . . . . . | 250 | 250 | 250  | 250  | volts |
| DC Grid-No.1 Voltage. . . . .  | -90 | -95 | -100 | -105 | volts |
| Peak AF Grid-No.2 Voltage<br>(For 100% modulation) . . . . .           | 140 | 150 | 160  | 170  | volts |
| Peak RF Grid-No.1 Voltage . . . . .                                    | 110 | 120 | 120  | 125  | volts |
| DC Plate Current. . . . .  | 200 | 200 | 200  | 200  | ma    |
| DC Grid-No.2 Current. . . . .  | 40  | 35  | 25   | 20   | ma    |
| DC Grid-No.1 Current (Approx.). . . . .                                | 7   | 8   | 10   | 15   | ma    |
| Driving Power (Approx.) . . . . .                                      | 1   | 1   | 1.5  | 2    | ma    |
| Power Output (Approx.). . . . .  | 55  | 80  | 100  | 140  | watts |

**Maximum Circuit Values:**

|   |            |      |
|---|------------|------|
| Grid-No.1-Circuit Resistance<br>under Any Condition . . . . . | 25000 max. | ohms |
|---|------------|------|

**RF POWER AMPLIFIER & OSCILLATOR — Class C Telegraphy<sup>q</sup>  
and**

**RF POWER AMPLIFIER — Class C FM Telephony**

**Maximum CCS<sup>q</sup> Ratings, Absolute-Maximum Values:**

|   | <i>Up to<br/>150 Mc</i> | <i>150 to<br/>500 Mc</i> |       |
|---|-------------------------|--------------------------|-------|
| DC PLATE VOLTAGE. . . . .                           | 2000 max.               | 1250 max.                | volts |
| DC GRID-No.2 (SCREEN-GRID)<br>VOLTAGE . . . . .     | 300 max.                | 300 max.                 | volts |
| DC GRID-No.1 (CONTROL-GRID)<br>VOLTAGE . . . . .    | -250 max.               | -250 max.                | volts |
| DC PLATE CURRENT. . . . .                           | 250 max.                | 250 max.                 | ma    |
| GRID-No.2 INPUT . . . . .                           | 12 max.                 | 12 max.                  | watts |
| GRID-No.1 INPUT . . . . .                           | 2 max.                  | 2 max.                   | watts |
| PLATE DISSIPATION . . . . .                         | 250 max.                | 250 max.                 | watts |
| PEAK HEATER-CATHODE VOLTAGE:                        |                         |                          |       |
| Heater negative with<br>respect to cathode. . . . . | 150 max.                | 150 max.                 | volts |
| Heater positive with<br>respect to cathode. . . . . | 150 max.                | 150 max.                 | volts |

**Typical CCS Operation:**

*Up to 150 Mc*

|                               |      |      |       |
|-------------------------------|------|------|-------|
| DC Plate Voltage. . . . .     | 1500 | 2000 | volts |
| DC Grid-No.2 Voltage. . . . . | 250  | 250  | volts |



# 7034/4X150A

|   |     |     |       |
|---|-----|-----|-------|
| DC Grid-No.1 Voltage. . . . .           | -88 | -88 | volts |
| Peak RF Grid-No.1 Voltage . . . . .     | 110 | 110 | volts |
| DC Plate Current. . . . .               | 250 | 250 | ma    |
| DC Grid-No.2 Current. . . . .           | 24  | 24  | ma    |
| DC Grid-No.1 Current (Approx.). . . . . | 8   | 8   | ma    |
| Driving Power (Approx.) . . . . .       | 1.5 | 2.5 | watts |
| Power Output (Approx.). . . . .         | 260 | 370 | watts |

### At 165 Mc

|   |     |     |      |      |       |
|---|-----|-----|------|------|-------|
| DC Plate Voltage. . . . .               | 600 | 750 | 1000 | 1250 | volts |
| DC Grid-No.2 Voltage. . . . .           | 250 | 250 | 250  | 250  | volts |
| DC Grid-No.1 Voltage. . . . .           | -75 | -80 | -80  | -90  | volts |
| Peak RF Grid-No.1 Voltage . . . . .     | 91  | 96  | 95   | 106  | volts |
| DC Plate Current. . . . .               | 200 | 200 | 200  | 200  | ma    |
| DC Grid-No.2 Current . . . . .          | 37  | 37  | 31   | 20   | ma    |
| DC Grid-No.1 Current (Approx.). . . . . | 11  | 11  | 10   | 11   | ma    |
| Driving Power (Approx.) . . . . .       | 1   | 1   | 1    | 1.2  | watts |
| Power Output (Approx.): . . . . .       | 85  | 110 | 150  | 195  | watts |

### At 500 Mc with coaxial cavity

|  |      |      |      |      |       |
|--|------|------|------|------|-------|
| DC Plate Voltage. . . . .                            | 600  | 800  | 1000 | 1250 | volts |
| DC Grid-No.2 Voltage. . . . .                        | 250  | 250  | 250  | 280  | volts |
| DC Grid-No.1 Voltage. . . . .                        | -110 | -110 | -110 | -115 | volts |
| DC Plate Current. . . . .                            | 170  | 200  | 200  | 200  | ma    |
| DC Grid-No.2 Current. . . . .                        | 6    | 7    | 7    | 5    | ma    |
| DC Grid-No.1 Current (Approx.) . . . . .             | 6    | 10   | 10   | 10   | ma    |
| Driver Power Output (Approx.) <sup>1</sup> . . . . . | 15   | 20   | 25   | 30   | watts |
| Useful Power Output (Approx.) . . . . .              | 50   | 95   | 120  | 140  | watts |

### Maximum Circuit Values:

Grid-No.1-Circuit Resistance  
under Any Condition . . . . . 25000 max. ohms

<sup>a</sup> Because the cathode is subjected to considerable back bombardment as the frequency is increased with resultant increase in temperature, the heater voltage should be reduced depending on operating conditions and frequency to prevent overheating the cathode and resultant short life.

<sup>b</sup> with cylindrical shield JEDEC No.320 surrounding radiator; and with a cylindrical shield JEDEC No.321 surrounding the grid-No.2 ring terminal. Both shields are connected to ground.

<sup>c</sup> Available from E.F. Johnson Co., Waseca, Minn.

<sup>d</sup> For use at lower frequencies.

<sup>e</sup> For use at higher frequencies.

<sup>f</sup> Subscript 1 indicates that grid-No.1 current does not flow during any part of the input cycle.

<sup>g</sup> Continuous Commercial Service.

<sup>h</sup> Averaged over any audio-frequency cycle of sine-wave form.

<sup>j</sup> Subscript 2 indicates that grid-No.1 current flows during some part of the input cycle.

<sup>k</sup> Averaged over any frame.

<sup>l</sup> The driver stage is required to supply tube losses and rf-circuit losses. The driver stage should be designed to provide an excess of power above the indicated values to take care of variations in line voltage, in components, in initial tube characteristics, and in tube characteristics during life.

<sup>m</sup> Intermittent commercial and Amateur Service.

<sup>n</sup> "Single-Tone" operation refers to that class of amplifier service in which the grid-No.2 input consists of a monofrequency rf signal having constant amplitude. This signal is produced in a single-sideband suppressed-carrier system when a single audio frequency of constant amplitude is applied to the input of the system.



# 7034/4X150A

- P** Preferably obtained from a fixed supply.
- Q** The dc grid-No.2 voltage must be modulated approximately 55% in phase with the plate modulation in order to obtain 100% modulation of the 7034/4X150A. The use of a series grid-No.2 resistor or reactor may not give satisfactory performance and is therefore not recommended.
- R** Obtained from grid-No.1 resistor or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor.
- S** Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

## CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

|   | Note    | Min. | Max. |                  |
|---|---------|------|------|------------------|
| Heater Current . . . . .                              | 1       | 2.3  | 2.9  | amp              |
| Direct Interelectrode Capacitances:                   |         |      |      |                  |
| Grid No.1 to plate . . . . .                          | 2       | -    | 0.05 | $\mu\mu\text{f}$ |
| Grid No.1 to cathode, grid No.2, and heater . . . . . | 2       | 14.5 | 17.0 | $\mu\mu\text{f}$ |
| Plate to cathode, grid No.2, and heater . . . . .     | 2       | 4.0  | 4.8  | $\mu\mu\text{f}$ |
| Grid-No.1 Voltage . . . . .                           | 1,3,4,5 | -32  | -46  | volts            |
| Grid-No.2 Current . . . . .                           | 1,3,4,5 | -5   | 3    | ma               |
| Power Output . . . . .                                | 4,5,6   | 100  | -    | watts            |

Note 1: With 6.0 volts on heater.

Note 2: With cylindrical shield JEDEC No.320 surrounding radiator; and with a cylindrical shield JEDEC No.321 surrounding the grid-No.2 ring terminal. Both shields are connected to ground.

Note 3: With dc plate volts = 1000, dc grid-No.2 volts = 300, and grid-No.1 voltage adjusted to give plate current of 150 milliamperes.

Note 4: With forced-air cooling as specified under GENERAL DATA for *Air-System Socket*.

Note 5: Heater voltage must be applied for at least 30 seconds before application of other voltages.

Note 6: With heater volts = 5.5, dc plate volts = 1000, dc grid-No.2 volts = 250, dc grid-No.1 volts = -90, maximum dc grid-No.1 milliamperes = 20, grid-No.1 signal voltage adjusted to give dc plate current of 200 milliamperes, and a frequency of 475 Mc.

## SPECIAL PERFORMANCE DATA

### Interelectrode Leakage:

This test is destructive and is performed on a sample lot of tubes from each production run under the following conditions: ac heater volts = 6.6, no voltage on other elements, and specified forced-air cooling for *Air-System Socket*. At the end of 500 hours, with tube at 25° C, and with no voltage applied to heater, the minimum resistance between indicated electrodes as measured with a 500-volt Megger-type ohmmeter having an internal impedance of 2.5 megohms, will be:

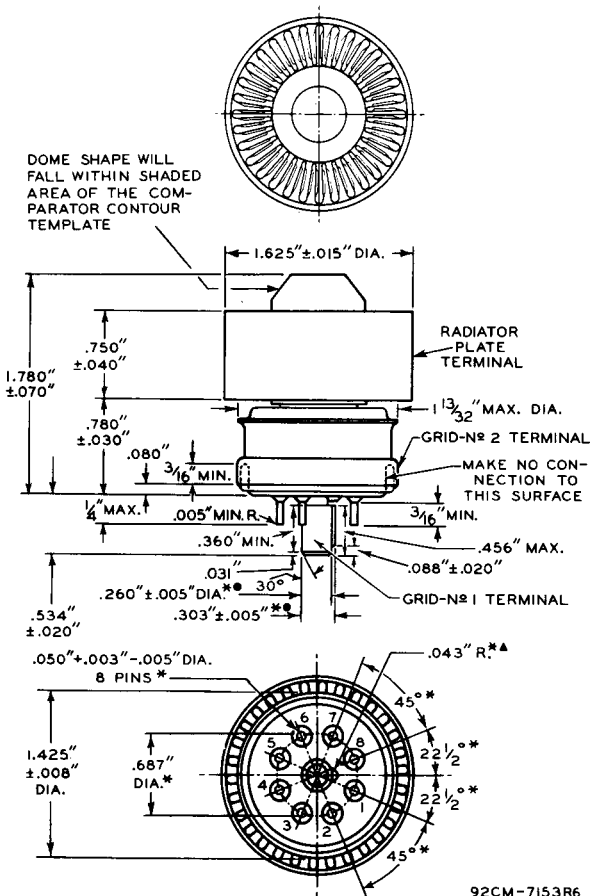
|                                   |         |         |
|-----------------------------------|---------|---------|
| Grid No.1 and Grid No.2 . . . . . | 10 min. | megohms |
| Grid No.1 and Cathode . . . . .   | 10 min. | megohms |
| Grid No.2 and Cathode . . . . .   | 10 min. | megohms |

→ Indicates a change.





# 7034/4X150A



GRID-No. 1 PLUG DIMENSIONS ARE MEASURED BY THE USE OF THE SERIES OF GAUGES SHOWN IN SKETCHES G<sub>1</sub> AND G<sub>2</sub>. IN THE FOLLOWING INSTRUCTIONS FOR THE USE OF THESE GAUGES, "GO" INDICATES THAT THE ENTIRE GRID-No. 1 PLUG KEY WILL ENTER THE GAUGE; AND "NO-GO" INDICATES THAT THE GRID-No. 1 PLUG KEY WILL NOT ENTER THE GAUGE MORE THAN 1/16". INSTRUCTIONS FOR THE USE OF THE GAUGES FOLLOW:

▲, ●, \*: See next page.



# 7034/4X150A

▲ GAUGES  $G_1-1$ ,  $G_1-2$ ,  $G_1-3$ , AND  $G_1-4$ :

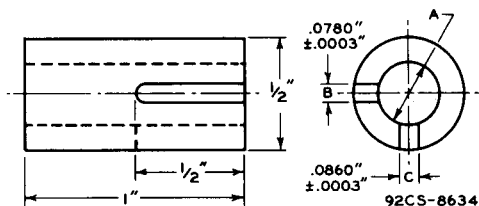
USING ONLY SLOT C, TRY THESE GAUGES IN NUMERICAL ORDER UNTIL ONE IS FOUND THAT WILL ACCEPT THE ENTIRE GRID-NO. 1 PLUG. USING THE FIRST GAUGE THUS FOUND, IT WILL NOT BE POSSIBLE TO INSERT THE GRID-NO. 1 PLUG IN SLOT B.

● GAUGES  $G_2-1$ ,  $G_2-2$ , AND  $G_3-3$ :

THE GRID-NO. 1 PLUG WILL BE REJECTED BY GAUGES  $G_2-1$  AND  $G_2-2$ , BUT WILL BE ACCEPTED BY GAUGE  $G_2-3$ .

\* BASE-PIN POSITIONS ARE HELD TO TOLERANCES SUCH THAT THE ENTIRE LENGTH OF THE PINS WILL, WITHOUT UNDUE FORCE, PASS INTO AND DISENGAGE FROM THE FLAT-PLATE GAUGE SHOWN IN SKETCH  $G_3$ .

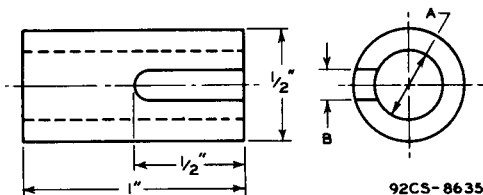
GAUGE SKETCH  $G_1$



| Gauge   | Dimension A                 |
|---------|-----------------------------|
| $G_1-1$ | .2575" + .0000"<br>- .0005" |
| $G_1-2$ | .2600" + .0000"<br>- .0005" |
| $G_1-3$ | .2625" + .0000"<br>- .0005" |
| $G_1-4$ | .2650" + .0000"<br>- .0005" |

# 7034/4X150A

GAUGE SKETCH G<sub>2</sub>

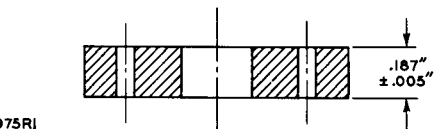
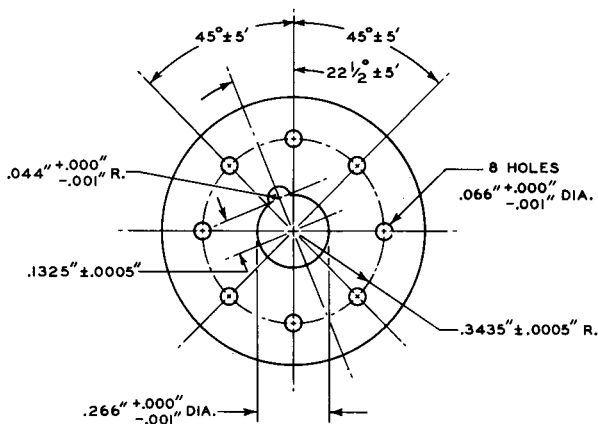


| Gauge             | Dimension                   |       |
|-------------------|-----------------------------|-------|
|                   | A                           | B     |
| G <sub>2</sub> -1 | .2550" + .0000"<br>- .0005" | .125" |
| G <sub>2</sub> -2 | .2980" + .0000"<br>- .0005" | none  |
| G <sub>2</sub> -3 | .3080" + .0000"<br>- .0005" | none  |



# 7034/4X150A

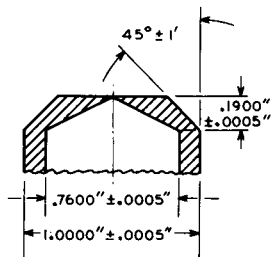
GAUGE SKETCH G<sub>3</sub>



92CS-7975R1

TOLERANCES ARE NOT CUMULATIVE

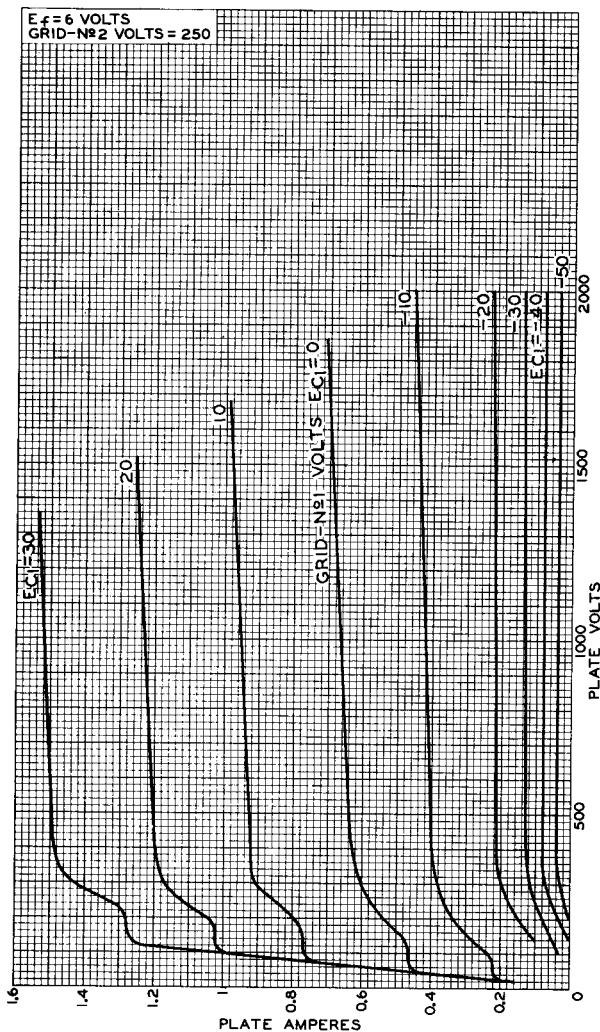
COMPARATOR CONTOUR TEMPLATE



92CS-10554R1



## TYPICAL PLATE CHARACTERISTICS

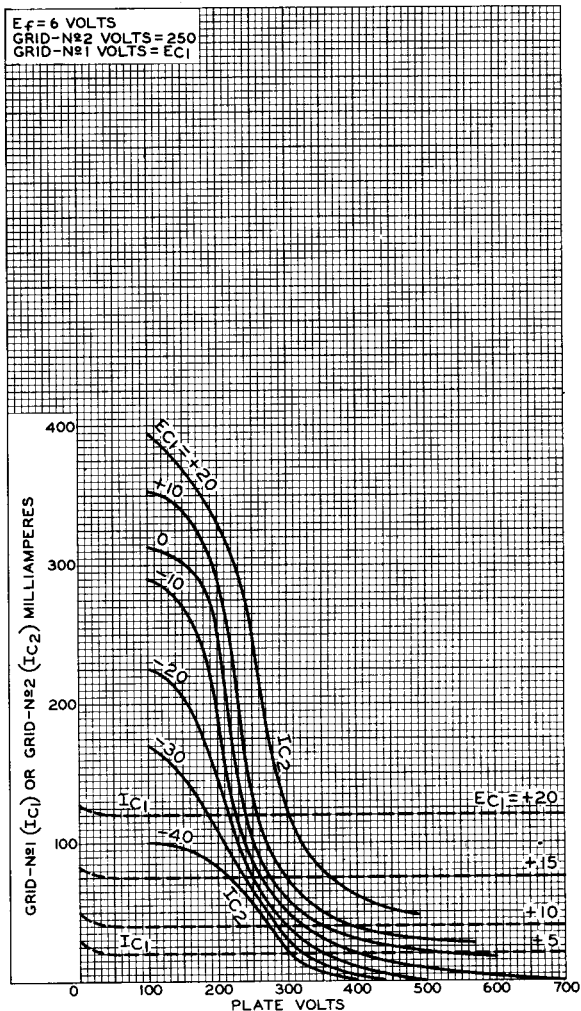


92CM - 9755



# 7034/4X150A

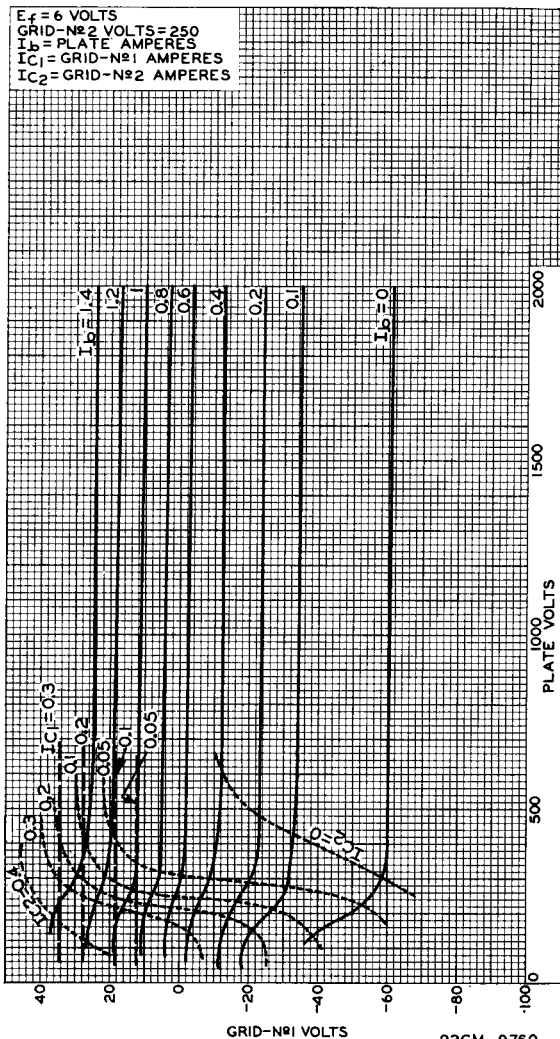
## TYPICAL CHARACTERISTICS



92CM-9756



## TYPICAL CONSTANT-CURRENT CHARACTERISTICS

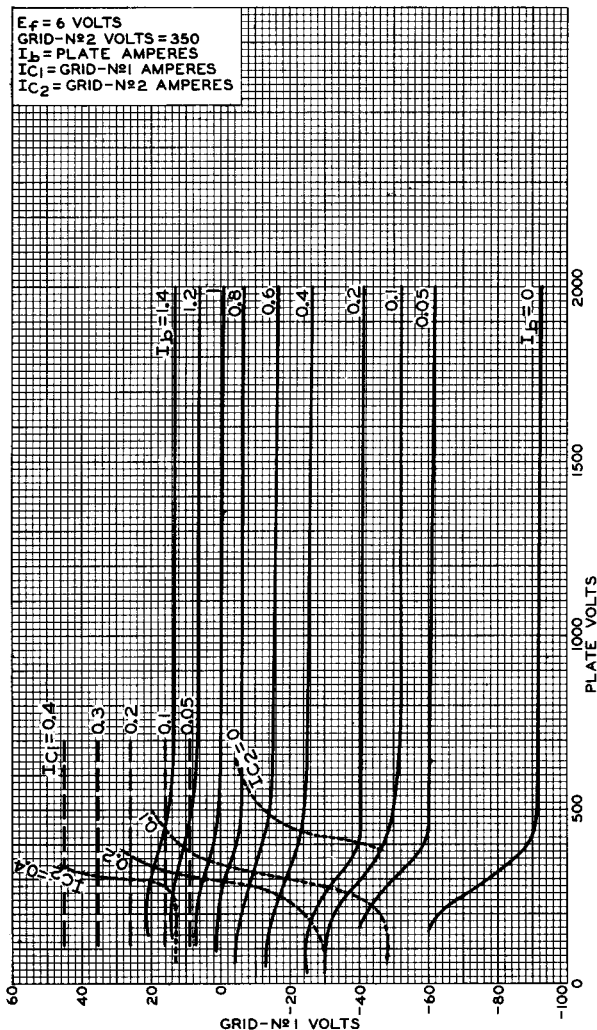


92CM-9760



# 7034/4X150A

## TYPICAL CONSTANT-CURRENT CHARACTERISTICS



92CM-9761

