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EIMAC Division of Varian manufactures a complete line of vacuum tubes and accessories, including rectifiers, triodes, tetrodes, pentodes, pulse modulators, and associated equipment.

When Eitel-McCullough, Inc., merged with Varian Associates in 1965, the brand significance of the widely-known EIMAC symbol was retained, and EIMAC now operates as a division of Varian’s Electron Tube and Device Group. EIMAC employs over 800 persons at the division’s main plant in San Carlos, California, and another 350 at a recently-expanded factory in Salt Lake City, Utah.

Major production activity at the San Carlos plant covers the manufacture of ceramic / metal triodes, tetrodes and pentodes; glass and ceramic envelope tubes and a wide line of planar triodes are major production items at the Salt Lake City plant.

These two factories, among the most modern electronic tube production facilities in the country, have all manufacturing areas designed on a “flow” system for maximum efficiency. Clean rooms for critical assembly work are ventilated with filtered and pressurized air, for maximum tube yield and reliability. Giant EIMAC-developed rotary vacuum pumps are in operation to produce high vacuums in thousands of tubes per day. Facilities for fabricating and processing ceramic materials include some of the most modern equipment available. Extensive environmental test equipment is also available for checking tube performance under unusual conditions of shock, vibration, humidity, and high altitude.

Quality assurance procedures are very rigid, and include both operator surveillance, batch sampling, and statistical controls.

The division’s tube development and circuit techniques laboratories are especially designed for production of experimental tube types and for modification of existing designs to meet special customer requirements.

Applications and marketing services are available from division headquarters in San Carlos, or from any of the 16 Varian Electron Tube and Device Group field offices throughout the country.
1. Hand-winding grid for 4CX250B—San Carlos
2. Sealing tube structure on glass lathe—Salt Lake City
3. Metallizing ceramic blanks in hydrogen furnace—San Carlos
4. Nitrogen atmosphere welder—San Carlos
5. Carburizing 4-400A filaments—Salt Lake City
6. Aging racks—San Carlos
7. Measuring tube linearity—San Carlos
8. Rotary exhaust furnaces—San Carlos
9. Curve plotter in development laboratory—San Carlos
Eimac Power Grid Tube Numbering System

Since 1945 all new tube types developed by Eimac have been given a type number chosen according to a coded number system. This system is designed to convey descriptive information about the tube.

In general, the type numbers consist of: a numeral indicating the number of electrodes, one or more letters denoting special characteristics, a numeral representing the plate dissipation, and a final letter to distinguish the tube from others bearing similar preceding letters and numerals. Triode types carry an additional number to indicate their approximate amplification factor.

To illustrate the method of coding and the information the type number conveys, a 100-watt, ceramic, external-anode, forced-air cooled Eimac triode, type number 3CX100A5, is broken down as follows:

- **NUMBER OF ELECTRODES**
  - 2—Diode
  - 3—Triode
  - 4—Tetrode
  - 5—Pentode

- **AMPLIFICATION FACTOR**
  - 1—0 to 10
  - 2—11 to 20
  - 3—21 to 30
  - 4—31 to 50
  - 5—51 to 100
  - 6—101 to 200
  - 7—201 to 500
  - 8—501 to 1000

- **PLATE DISSIPATION (Watts)**
  - C—Ceramic Envelope (No Glass)
  - N—External Anode, Natural Convection Air Cooling
  - P—Primarily for Pulse Applications
  - R—Internal Anode, Radiation Cooled
  - S—External Anode, Conduction Cooled
  - V—External Anode, Vapor Cooled
  - W—External Anode, Water Cooled
  - X—External Anode, Forced-Air Cooled

- **DESCRIPTION**
  - D—Discriminator
  - N—Natural
  - P—Preliminary
  - S—Special

- **VERSION**
  - D—Discriminator
  - N—Natural
  - P—Preliminary
  - S—Special

The type number 3CX100A5 corresponds to a 100-watt, ceramic, external-anode, forced-air cooled Eimac triode.

*In older types, the dash, as in the case of the 4-250A, carries the meaning of "R" given above.
This group of Eimac Power Grid Tubes are recommended for direct replacement only, and not for new equipment design.

<table>
<thead>
<tr>
<th>DIODES AND RECTIFIERS</th>
<th>TRIODES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTERNAL ANODE</strong></td>
<td><strong>INTERNAL ANODE</strong></td>
</tr>
<tr>
<td>2.25A</td>
<td>25T</td>
</tr>
<tr>
<td>2.50A</td>
<td>35T</td>
</tr>
<tr>
<td>8020/100R</td>
<td>35TG</td>
</tr>
<tr>
<td>2.15D</td>
<td>826</td>
</tr>
<tr>
<td></td>
<td>75TH</td>
</tr>
<tr>
<td></td>
<td>75TL</td>
</tr>
<tr>
<td></td>
<td>100TH</td>
</tr>
<tr>
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<td>100TL</td>
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<td>152TH</td>
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<tr>
<td></td>
<td>152TL</td>
</tr>
<tr>
<td></td>
<td>592</td>
</tr>
<tr>
<td><strong>EXTERNAL ANODE</strong></td>
<td><strong>MERCURY VAPOR</strong></td>
</tr>
<tr>
<td>2X1000A</td>
<td>RX21A</td>
</tr>
<tr>
<td>2X3000F</td>
<td>KY21A</td>
</tr>
</tbody>
</table>

The following Eimac Power Grid Tubes are current for new equipment design.

**DIODES**

**2-01C**
A general-purpose UHF instrument diode capable of maintaining an accuracy of ±1 db to 700 megacycles. This diode is well suited to probe mounting and is useful as an indicator at frequencies as high as 3000 megacycles. The 2-01C is cooled by convection and radiation.

**CHARACTERISTICS**
- **Cathode:** Oxide-coated, unipotential
- **Heater:**
  - **Voltage:** 5.0 volts
  - **Current:** 0.31 to 0.39 amperes
- **Max. Seal Temp.:** 250 °C
- **Max. Anode-Core Temp.:** 250 °C
- **Length:** 1.813 inches
- **Diameter:** 0.563 inches
- **Net Weight:** 0.2 ounce
- **Plate Inverse D-C Current:** 0.001 amperes
- **Plate Dissipation:** 0.1 watt

**322**
The 322 is a ceramic and metal diode. This tube is widely used in T-R networks and as a demodulator in VHFemi range equipment.

**CHARACTERISTICS**
- **Cathode:** Oxide-coated, unipotential
- **Heater:**
  - **Voltage:** 6.3 volts
  - **Current:** 0.9 to 1.0 amperes
- **Capacitance** (Cpk): 3.1 to 3.8 pl
- **Base:** Coastal Special
- **Max. Seal Temp.:** 350 °C
- **Max. Anode-Core Temp.:** 250 °C
- **Length:** 2.35 inches
- **Diameter:** 1.265 inches
- **Net Weight:** 0.2 ounce
- **Peak Inverse D-C Current:** 800 volts
- **Plate Current:** 0.125 amperes
- **Plate Dissipation:** 100 watts
### 2C39A

The 2C39A is a ceramic-metal high-mu planar triode with a plate dissipation rating of 100 watts, designed for use as a power amplifier, oscillator, or frequency multiplier at frequencies above 2500 MHz.

**Characteristics**

- **Plate Dissipation:** 100 watts
- **Frequency for Maximum Ratings:** 2500 MHz
- **Cooling:** Forcible Air

**Base Coaxial**

**Socket Special**

**Maximum Seal Temp.** 250 °C

**Maximum Anode Core Temp.** 250 °C

**Maximum Height:** 2.75 inches

**Maximum Diameter:** 1.27 inches

**Net Weight:** 2.5 ounces

#### Typical Operation

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier</td>
<td>1000</td>
<td>0.125</td>
<td>100</td>
<td>2.0</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Modulated Radio-Frequency Amplifier or Oscillator</td>
<td>600</td>
<td>0.10</td>
<td>70</td>
<td>2.0</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Oscillator</td>
<td>800</td>
<td>0.125</td>
<td>100</td>
<td>2.0</td>
</tr>
</tbody>
</table>

### 2C39WA

The 2C39WA is essentially the same as the 2C39A planar triode. It is recommended for replacement in equipment calling for this type.

**Characteristics**

- **Plate Dissipation:** 100 watts
- **Frequency for Maximum Ratings:** 2500 MHz
- **Cooling:** Forcible Air

**Base Coaxial**

**Socket Special**

**Maximum Seal Temp.** 250 °C

**Maximum Anode Core Temp.** 250 °C

**Maximum Height:** 2.75 inches

**Maximum Diameter:** 1.27 inches

**Net Weight:** 2.5 ounces

#### Typical Operation

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier</td>
<td>1000</td>
<td>0.125</td>
<td>100</td>
<td>2.0</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Modulated Radio-Frequency Amplifier or Oscillator</td>
<td>600</td>
<td>0.10</td>
<td>70</td>
<td>2.0</td>
</tr>
<tr>
<td>C</td>
<td>Radio-Frequency Oscillator</td>
<td>800</td>
<td>0.125</td>
<td>100</td>
<td>2.0</td>
</tr>
</tbody>
</table>

### 7211

A planar triode featuring one third more cathode current than the 3CX100A5. The 7211 is of all ceramic-metal construction. The plate-grid ceramic is longer than the 3CX100A5 making the tube more useful in pulse service or high altitude environments. Power output of 30 watts is available at 2500 MHz.

**Characteristics**

- **Plate Dissipation:** 100 watts
- **Frequency for Maximum Ratings:** 2500 MHz
- **Cooling:** Forcible Air

**Base Coaxial**

**Maximum Seal Temp.** 250 °C

**Maximum Anode Core Temp.** 250 °C

**Maximum Height:** 2.75 inches

**Maximum Diameter:** 1.27 inches

**Net Weight:** 2.5 ounces

#### Typical Operation

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier</td>
<td>500</td>
<td>0.14</td>
<td>9</td>
<td>65</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Pulsed Power Oscillator—3000 MHz</td>
<td>3,500</td>
<td>3.0</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>Grid Pulsed Amplifier—1100 MHz</td>
<td>2500</td>
<td>3.6</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

### 7815/3CPN10A5

This ceramic and metal, UHF, planar triode is designed primarily for use in low-duty pulse applications. It is capable of delivering 1000 watts pulse output power at 3000 MHz at a duty of 0.0025.

The electrical characteristics of the 3CPN10A5 are similar to those of the 3CX100A5. The nominal plate dissipation rating of 10 watts may be exceeded if sufficient additional cooling is provided to maintain the anode and seal temperatures below the specified limits.

**Characteristics**

- **Plate Dissipation:** 10 watts
- **Frequency for Maximum Ratings:** 3000 MHz
- **Cooling:** Convection or Forcible Air

**Base Coaxial**

**Socket Special**

**Maximum Seal Temp.** 250 °C

**Maximum Anode Temp.** 250 °C

**Maximum Height:** 2.70 inches

**Maximum Diameter:** 1.15 inches

**Net Weight:** 1.6 ounces

#### Maximum Pulse Ratings

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps.)</th>
<th>Grid. Diss. (watts)</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps.)</th>
<th>Duty Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Plate-Pulsed Power Oscillator—3000 MHz</td>
<td>3,500</td>
<td>3.0</td>
<td>10</td>
<td>2</td>
<td>3,300</td>
<td>3.0</td>
<td>0.0025</td>
</tr>
<tr>
<td>C</td>
<td>Grid Pulsed Amplifier—1100 MHz</td>
<td>2500</td>
<td>3.6</td>
<td>10</td>
<td>2</td>
<td>2200</td>
<td>1.9</td>
<td>0.001</td>
</tr>
</tbody>
</table>
7698

A ceramic-metal planar triode usable to 3000 MHz. As a grid-pulsed amplifier at 1100 MHz or a plate pulsed amplifier at 3000 MHz, 2500 watts of power output is attainable. Cooling is by convection and conduction to a suitable heat sink.

**PLATE DISSIPATION**

10 watts

**FREQUENCY FOR MAXIMUM RATINGS**

3000 MHz

**COOLING**

Conduction and Convection

---

7289/3CX100A5

The 3CX100A5 ceramic and metal planar UHF triode is intended to supersede all tubes in the 2C39A family. Narrow mechanical tolerances plus exacting electrical testing assures tube-to-tube uniformity. The tube unilaterally replaces 2C39A's and other associated tube types in most equipment without requiring electrical or mechanical modification.

**PLATE DISSIPATION**

100 watts

**FREQUENCY FOR MAXIMUM RATINGS**

2500 MHz

**COOLING**

Forced Air

---

8250/3CX100F5

The 3CX100F5 ceramic and metal planar UHF triode features narrow mechanical tolerances plus exacting electrical testing assures tube-to-tube uniformity.

**PLATE DISSIPATION**

100 watts

**FREQUENCY FOR MAXIMUM RATINGS**

2500 MHz

**COOLING**

Forced Air

---

7815R/3CPX100A5

A ceramic-metal UHF planar triode intended for pulse and high altitude applications. It is similar to the popular 3CX100A5 but features a longer grid-anode ceramic insulator with a higher voltage breakdown rating. The pulse ratings are applicable to 70,000 feet altitude making the 3CPX100A5 especially suitable for airborne applications.

**PLATE DISSIPATION**

100 watts

**FREQUENCY FOR MAXIMUM RATINGS**

2000 MHz

**COOLING**

Forced Air
TRIODES

**7855**
The 7855 is a ruggedized, high-mu planar triode of ceramic-metal construction, designed for use as a grid-pulsed, plate-pulsed, or CW oscillator, frequency multiplier, or amplifier in radio transmitting service from low frequency to 3 GHz. In addition to low interelectrode capacitance, high transconductance and high mu, this tube incorporates design features which help to assure frequency-stable operation.

- **PLATE DISSIPATION**: 100 watts average
- **FREQUENCY FOR MAXIMUM RATINGS**: 3 GHz

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diode (watts)</th>
<th>Grid Plate (watts)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RF Power Amplifier and 2500 MHz Oscillator</td>
<td>2500</td>
<td>0.150</td>
<td>100</td>
<td>2.9</td>
<td>990</td>
<td>0.140</td>
</tr>
<tr>
<td>C</td>
<td>Grid-Pulsed RF Oscillator and Amplifier</td>
<td>2500</td>
<td>5.0 pk</td>
<td>33</td>
<td>2.6</td>
<td>2090</td>
<td>4.0</td>
</tr>
</tbody>
</table>

**8403**
The 8403 is a ruggedized, high-mu planar triode of ceramic-metal construction, designed for use as a grid-pulsed, plate-pulsed oscillator, frequency multiplier or amplifier from low frequency to 3 GHz. A distinguishing characteristic of this tube is its high cathode-current capability. In addition to low interelectrode capacitance, high transconductance and high mu, this tube incorporates design features which help to assure frequency-stable operation.

- **PLATE DISSIPATION**: 100 watts average
- **FREQUENCY FOR MAXIMUM RATINGS**: 3 GHz

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diode (watts)</th>
<th>Grid Plate (watts)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RF Power Amplifier and Oscillator</td>
<td>2500</td>
<td>0.150</td>
<td>100</td>
<td>2.9</td>
<td>990</td>
<td>0.140</td>
</tr>
<tr>
<td>C</td>
<td>Grid-Pulsed RF Oscillator and Amplifier</td>
<td>2500</td>
<td>5.0 pk</td>
<td>33</td>
<td>2.6</td>
<td>2090</td>
<td>4.0</td>
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</tbody>
</table>

**8533**
The 8533 is a high-mu planar triode designed for use as a grid-pulsed or plate-pulsed oscillator, frequency multiplier, power amplifier or as a switch tube at high plate voltages. Noteworthy differences in this tube as compared to similar types are an extended grid-cathode insulator and a special cathode design, permitting operation with up to 8000 Vdc plate voltage.

- **PLATE DISSIPATION**: 100 watts average
- **FREQUENCY FOR MAXIMUM RATINGS**: 3 GHz

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diode (watts)</th>
<th>Grid Plate (watts)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Pulse Modulator or Pulse Amplifier</td>
<td>8000</td>
<td>5.0 pk</td>
<td>100</td>
<td>1.5</td>
<td>—</td>
<td>—</td>
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<tr>
<td>C</td>
<td>Grid-Pulsed or Plate-Pulsed RF Oscillator and Amplifier</td>
<td>8000</td>
<td>5.0 pk</td>
<td>100</td>
<td>1.5</td>
<td>—</td>
<td>—</td>
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</table>

**8745**
A ceramic-metal UHF planar triode intended for pulse and high altitude applications. It is similar to the popular 3CX100A5 but features a longer grid-oxide ceramic insulator with a higher voltage breakdown rating. The pulse ratings are applicable to 70,000 feet attitude making the 8745 especially suitable for airborne applications.

- **PLATE DISSIPATION**: 100 watts average
- **FREQUENCY FOR MAXIMUM RATINGS**: 2500 MHz

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diode (watts)</th>
<th>Grid Plate (watts)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
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</thead>
<tbody>
<tr>
<td>C</td>
<td>Plate-Pulsed Power Oscillator—3000 MHz</td>
<td>3500</td>
<td>3.0 pk</td>
<td>100</td>
<td>2</td>
<td>3500</td>
<td>3.0</td>
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<tr>
<td>C</td>
<td>Grid Pulsed Amplifier—1100 MHz</td>
<td>2600</td>
<td>3.0 pk</td>
<td>100</td>
<td>2</td>
<td>1700</td>
<td>1.9</td>
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</tbody>
</table>
**8755**

The 8755 is a miniature, frequency-stable planar triode for advanced airborne and space applications up to 3000 MHz at full ratings. The rugged ceramic-metal pulse tube is designed for high-voltage, high-pulse current operation and features large contact areas for improved electrical paths. The tube may be used as an amplifier or an oscillator and employs an arc-resistant cathode.

**PLATE DISSIPATION** 150 watts

**FREQUENCY FOR MAXIMUM RATINGS** 3000 MHz

**COOLING** Forced Air or Conduction

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**8756**

The 8756 is a miniature, frequency-stable planar triode for pulse applications up to 2500 MHz at full ratings. The tube is designed for high pulse current operation.

**PLATE DISSIPATION** 100 watts (average)

**FREQUENCY FOR MAXIMUM RATINGS** 2500 MHz

**COOLING** Conduction or Forced Air

---

**8757**

The 8757 is a miniature, ceramic and metal planar triode designed primarily for CW amplifier and oscillator application. This tube will also perform well as a grid or a plate-pulsed amplifier or oscillator at frequencies up to at least 3000 MHz.

**PLATE DISSIPATION** 150 watts

**FREQUENCY FOR MAXIMUM RATINGS** 2500 MHz

**COOLING** Conduction or Forced Air

---

**254W**

The 254W is a radiation-cooled tube suitable for use as an RF power amplifier, frequency multiplier or oscillator, and as an AF power amplifier and modulator. The tube is widely used in base station communications equipment and is exceptionally efficient in VHF operation.

**PLATE DISSIPATION** 100 watts

**COOLING** Radiation

---

**INTERNATIONAL ANODE**

---

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Plate</td>
<td>Grid</td>
</tr>
</tbody>
</table>

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5867A
A new medium-mu triode, the 5867A is capable of over one kilowatt input to 100 Mc. It is useful as a Class AB amplifier, Class C amplifier or industrial oscillator. The plate dissipation rating is 375 watts.

PLATE DISSIPATION 350 watts
GRID DISSIPATION 70 watts
COOLING Radiation and Forced Air

6569
The 6569 is a high-mu power triode designed especially for grounded grid RF amplifier service, but is also capable of good performance in other applications. Because of its high amplification factor and high perveance, the 6569 will give power gains as high as ten in grounded-grid amplifier applications. Because of internal shielding, neutralization is not required.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 60 MHz
COOLING Forced Air

6580
The 6580 is a 400-watt high-mu power triode designed especially for grounded-grid RF amplifier service, but is also capable of good performance in other applications. Because of its high amplification factor and high perveance, the 6580 will provide power gains as high as ten in grounded-grid amplifier applications. Because of internal shielding, neutralization is not required.

PLATE DISSIPATION 400 watts
FREQUENCY FOR MAXIMUM RATINGS 50 MHz
COOLING Forced Air

8163/3-400Z
The Eimac 3-400Z is a new zero-bias triode intended for linear amplifier applications. This tube may be used as a Class B RF amplifier in either the grid-driven or cathode-driven connection, or two 3-400Z's may be used in push-pull as a grid-driven Class B audio amplifier or modulator. At a plate voltage of 3000 volts, 1Kw PEP input can be run with a single 3-400Z, providing a power gain of over 20 in the cathode-driven connection.

MAXIMUM PLATE DISSIPATION 400 watts
FREQUENCY FOR MAXIMUM RATINGS 110 MHz
COOLING Radiation and Forced Air

CHARACTERISTICS

5867A
Filament: Thoriated tungsten
Voltage 5.0 volts
Current 3.1 amperes
Capacitances:
Grid-Filament 7.2 pf
Grid-Plate 5.6 pf
Plate-Filament 0.5 pf

Maximum Ratings
Class of Type of Service
<table>
<thead>
<tr>
<th>Plate Voltage (vols)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (vols)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
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</thead>
<tbody>
<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier</td>
<td>4000</td>
<td>0.400</td>
<td>350</td>
<td>30</td>
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<tr>
<td></td>
<td></td>
<td>3000</td>
<td>0.365</td>
<td>27</td>
<td>840</td>
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<tr>
<td>C</td>
<td>Oscillator, Industrial Application, Single Phase, Full Wave Rectifier, Unfiltered</td>
<td>3800</td>
<td>0.360</td>
<td>350</td>
<td>30</td>
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<tr>
<td></td>
<td></td>
<td>2750</td>
<td>0.340</td>
<td>—</td>
<td>685</td>
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<tr>
<td>C</td>
<td>Oscillator, Industrial Application, Self-Rectified</td>
<td>4500</td>
<td>0.210</td>
<td>350</td>
<td>30</td>
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<tr>
<td></td>
<td></td>
<td>3000</td>
<td>0.180</td>
<td>—</td>
<td>415</td>
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</tbody>
</table>

6569
Filament: Thoriated tungsten
Voltage 5.0 volts
Current 14.1 amperes
Capacitances:
Grid-Filament 7.6 pf
Grid-Plate 3.7 pf
Plate-Filament 0.10 pf

Maximum Ratings
Class of Type of Service
<table>
<thead>
<tr>
<th>Plate Voltage (vols)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (vols)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
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<tbody>
<tr>
<td>C</td>
<td>RF Power Amplifier Grounded Grid</td>
<td>4000</td>
<td>0.300</td>
<td>250</td>
<td>0.12</td>
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<tr>
<td></td>
<td></td>
<td>3500</td>
<td>0.285</td>
<td>85</td>
<td>895</td>
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<tr>
<td>B</td>
<td>Linear RF Amplifier, SSB, Suppressed Carrier, Grounded Grid</td>
<td>4000</td>
<td>0.300</td>
<td>250</td>
<td>0.12</td>
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<tr>
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<td></td>
<td>3500</td>
<td>0.270</td>
<td>75</td>
<td>765</td>
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</table>

6580
Filament: Thoriated tungsten
Voltage 5.0 volts
Current 3.6 amperes
Capacitances:
Grid-Filament 7.6 pf
Grid-Plate 3.0 pf
Plate-Filament 0.10 pf

Maximum Ratings
Class of Type of Service
<table>
<thead>
<tr>
<th>Plate Voltage (vols)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (vols)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RF Power Amplifier Grounded Grid</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
<td>0.12</td>
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<tr>
<td></td>
<td></td>
<td>3500</td>
<td>0.350</td>
<td>87</td>
<td>745</td>
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<tr>
<td>B</td>
<td>Linear RF Amplifier, SSB, Suppressed Carrier, Grounded Grid</td>
<td>4000</td>
<td>0.350</td>
<td>400</td>
<td>0.12</td>
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<tr>
<td></td>
<td></td>
<td>3500</td>
<td>0.300</td>
<td>68</td>
<td>765</td>
</tr>
</tbody>
</table>

8163/3-400Z
Filament: Thoriated tungsten
Voltage 5.0 volts
Current 13.5 to 14.7 amperes
Capacitances (Grounded Filament):
Grid-Filament 6.0 to 9.0 pf
Grid-Plate 4.0 to 6.3 pf
Plate-Filament 0.13 pf

Maximum Ratings
Class of Type of Service
<table>
<thead>
<tr>
<th>Plate Voltage (vols)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (vols)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Audio-Frequency Power Amplifier</td>
<td>3600</td>
<td>0.400</td>
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<td>10</td>
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<tr>
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<td></td>
<td>3000</td>
<td>0.360</td>
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<tr>
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<td>Radio-Frequency Linear Power Amplifier-SSB Grounded Grid</td>
<td>3000</td>
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<td>400</td>
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<td>0.350</td>
<td>400</td>
<td>20</td>
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<td>0.333</td>
<td>25</td>
<td>730</td>
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<td>C</td>
<td>Plate-Modulated R-F Power Amplifier</td>
<td>3800</td>
<td>0.275</td>
<td>270</td>
<td>20</td>
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</table>
**TRIODES**

### INTERNAL ANODE

**3-500Z**

The 3-500Z is a compact power triode intended for use as a zero-bias Class B amplifier in audio or radio-frequency applications. Operation with zero grid bias simplifies associated circuitry by eliminating the bias supply. In addition, grounded grid operation is attractive because a power gain as high as 60 can be obtained with the 3-500Z in a cathode-driven circuit.

**PLATE DISSIPATION** 500 watts
**FREQUENCY FOR MAXIMUM RATINGS** 110 MHz
**COOLING** Radiation and Forced Air

### EXTERNAL ANODE FORCED-AIR COOLED

**8164/3-1000Z**

The Eimac 3-1000Z is a zero-bias triode intended for linear amplifier applications. The tube may be used as a class-B RF amplifier in either the grid-driven or cathode-driven connection, or a 2-1000Z may be used in push-pull as a grid-driven class-B audio amplifier or modulator. At a plate voltage of 1500 volts, 2KW PEP input can be run with the single 3-1000Z, providing a power gain of over 20 in the cathode-driven connection.

**MAXIMUM PLATE DISSIPATION** 1000 watts
**FREQUENCY FOR MAXIMUM RATINGS** 110 MHz
**COOLING** Radiation and Forced Air

### GENERAL CHARACTERISTICS

**CHARACTERISTICS**

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<th>Operation</th>
<th>Type of Service</th>
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<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>RF Linear Amplifier, Grounded Grid</td>
<td>Plate Voltage (volts) 4000</td>
<td>Plate Power (watts) 3000</td>
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<tr>
<td>B</td>
<td>AF Amplifier or Modulator</td>
<td>Plate Voltage (volts) 4000</td>
<td>Plate Power (watts) 3000</td>
</tr>
<tr>
<td>C</td>
<td>RF Power Amplifier or Oscillator</td>
<td>Plate Voltage (volts) 4000</td>
<td>Plate Power (watts) 3000</td>
</tr>
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</table>

**REFERENCE**

*Two tubes.*

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**8283/3CX1000A7**

The 3CX1000A7 zero-bias triode features ceramic-metal construction and a mesh thoriated-tungsten filament. Positive socketing is provided by three breechblock terminal surfaces. This tube is intended for Class-B linear amplifier service in either the grid-driven or cathode-driven connection. It is equally attractive for use at audio frequencies or at radio frequencies through the TV broadcast bands. It is recommended for use in new equipment.

**PLATE DISSIPATION** 1000 watts
**FREQUENCY FOR MAXIMUM RATINGS** 220 MHz
**COOLING** Forcéd Air

**CHARACTERISTICS**

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<tr>
<td>B</td>
<td>Audio-Frequency Power Amplifier and Modulator</td>
<td>Plate Voltage (volts) 3000</td>
<td>Plate Power (watts) 3000</td>
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<td>B</td>
<td>Radio-Frequency Linear Power Amplifier—SSB Grounded-Grid</td>
<td>Plate Voltage (volts) 3000</td>
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<td>C</td>
<td>Radio-Frequency Power Amplifier and Oscillator</td>
<td>Plate Voltage (volts) 3000</td>
<td>Plate Power (watts) 3000</td>
</tr>
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</table>

**REFERENCE**

*Two tubes.*

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**8161/3CX2500A3**

This popular high-power triode is widely employed in AM, FM, and TV service. Its coaxial filament and grid terminals insure low-inductance connection to these electrodes and allow operation at maximum ratings through 75 MHz. The use of an external forced-air-cooled anode results in a compact structure with high power-handling capability.

**PLATE DISSIPATION** 2500 watts
**FREQUENCY FOR MAXIMUM RATINGS** 110 MHz
**COOLING** Forcéd Air

**CHARACTERISTICS**

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<td>Audio-Frequency Power Amplifier and Modulator</td>
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<td>Radio-Frequency Power Amplifier</td>
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<td>Radio-Frequency Power Amplifier, Grounded-Grid 85 to 110 mc.</td>
<td>Plate Voltage (volts) 4000</td>
<td>Plate Power (watts) 4000</td>
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</table>

**REFERENCE**

*Two tubes.*
### 8251/3CX2500F3

**This compact, high-power triode has electrical characteristics identical to those of the 3CX250A3.**

- **Coaxial basting is not used, however, and special socketing is not required; conventional grid and filament leads are attached. This tube is frequently employed in industrial-heating or other radio-frequency equipments operating below 30 MHz.**

- **PLATE DISSIPATION:** 2500 watts
- **FREQUENCY FOR MAXIMUM RATINGS:** 30 MHz

**COOLING:** Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid-Volt (volts)</th>
<th>Grid-Curr (amps)</th>
<th>Grid-Diss (watts)</th>
<th>Plate-Volt (volts)</th>
<th>Plate-Curr (amps)</th>
<th>Plate-Diss (watts)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
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<td>B</td>
<td>Audio Frequency Power Amplifier and Modulator</td>
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<td>7.5</td>
<td>2500</td>
<td>150</td>
<td>6000</td>
<td>3.0*</td>
<td>113</td>
<td>13,000</td>
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<tr>
<td>C</td>
<td>Radio-Frequency Power Amplifier and Oscillator</td>
<td>6000</td>
<td>2.5</td>
<td>2500</td>
<td>150</td>
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<td>10,000</td>
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<tr>
<td>C</td>
<td>Plate-Modulated Radio-Frequency Power Amplifier</td>
<td>5000</td>
<td>2.0</td>
<td>2500</td>
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<td>6000</td>
<td>1.25</td>
<td>115</td>
<td>5300</td>
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</table>

*Two tubes.*

### 3CX2500H3

The 3CX2500H3 is an air-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating services. Its air-cooled anode is conservatively rated at 2500 watts of plate dissipation with low air flow and pressure drop. The tube’s grid structure is rated at 150 watts making it an excellent choice for severe applications.

- **PLATE DISSIPATION:** 2500 watts
- **FREQUENCY FOR MAXIMUM RATINGS:** 75 MHz

**COOLING:** Forced Air

**CHARACTERISTICS**

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<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
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<th>Grid-Volt (volts)</th>
<th>Grid-Curr (amps)</th>
<th>Grid-Diss (watts)</th>
<th>Plate-Volt (volts)</th>
<th>Plate-Curr (amps)</th>
<th>Plate-Diss (watts)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
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<td>RF Industrial Oscillator</td>
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<td>15</td>
<td>10,000</td>
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</table>

*Two tubes.*

### 8238/3CX3000A1

This high-power compact triode was specifically designed to be used in class-AB audio-amplifier service. Two tubes will typically deliver 10,000 watts output in such service. The 3CX3000A1 uses coaxial electrode terminals and may be installed or removed with a minimum of delay.

- **PLATE DISSIPATION:** 3000 watts
- **GRID DISSIPATION:** 50 watts

**COOLING:** Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid-Volt (volts)</th>
<th>Grid-Curr (amps)</th>
<th>Grid-Diss (watts)</th>
<th>Plate-Volt (volts)</th>
<th>Plate-Curr (amps)</th>
<th>Plate-Diss (watts)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>Audio-Frequency Power Amplifier and Modulator</td>
<td>6000</td>
<td>2.5</td>
<td>3000</td>
<td>0.63</td>
<td>2.65*</td>
<td>0</td>
<td>10,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Two tubes.*

### 8239/3CX3000F1

This low-mu high-power triode is electrically identical to the 3CX3000A1. Physically, however, coaxial terminals have been replaced by heavy leads and a special socket is not needed. Typically, 10,000 watts audio may be obtained from two tubes in a class AB amplifier.

- **PLATE DISSIPATION:** 3000 watts
- **GRID DISSIPATION:** 50 watts

**COOLING:** Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid-Volt (volts)</th>
<th>Grid-Curr (amps)</th>
<th>Grid-Diss (watts)</th>
<th>Plate-Volt (volts)</th>
<th>Plate-Curr (amps)</th>
<th>Plate-Diss (watts)</th>
<th>Drive Power (watts)</th>
<th>Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>Audio-Frequency Power Amplifier and Modulator</td>
<td>6000</td>
<td>2.5</td>
<td>3000</td>
<td>0.63</td>
<td>2.65*</td>
<td>0</td>
<td>10,000</td>
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<td></td>
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</tr>
</tbody>
</table>

*Two tubes.*
### 3CX3000A7

The 3CX3000A7 is a zero-bias triode intended for class-B linear amplifier applications. Operation with zero grid bias offers circuits simplicity by eliminating the bias supply. In addition, grounded-grid operation is attractive since a power gain of over twenty times can be obtained with the 3CX3000A7 in the cathode-driven connection. Because of its very high mu (200), this tube is also attractive for certain pulse modulator and voltage regulator applications.

- **Plate Dissipation**: 5000 watts
- **Maximum Power Output**: 5000 watts
- **Frequency**: 75 MHz

### 8162/3CX3000F7

This tube is identical to the 3CX3000A7 except for the addition of heavy grid and filament leads to simplify socketing problems. A pair of these tubes as audio amplifiers will deliver over 10 kilowatts output power.

- **Plate Dissipation**: 3000 watts
- **Frequency**: 30 MHz

### 3CX5000A3

The 3CX5000A3 is a medium-mu triode designed primarily for use in industrial radio-frequency heating service. A socket is not required because a grid contact flange is provided for bolting the tube directly to the grid deck.

- **Plate Dissipation**: 5000 watts
- **Frequency**: 90 MHz

### 3CX5000H3

The 3CX5000H3 is an air-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its air-cooled anode is conservatively rated at 5000 watts maximum plate dissipation with low pressure drop. The grid structure is rated at 150 watts making this tube an excellent choice for severe applications.

- **Plate Dissipation**: 5000 watts
- **Frequency**: 90 MHz
### 8158 / 3CX10,000A1

**Characteristics**
- **Filament:** Thoriated tungsten
- **Voltage:** 7.5 volts
- **Current:** 45 to 47.0 amperes
- **Capacitances (Grounded Filament):**
  - Grid-Filament: 45.0 to 57.0 pf
  - Grid-Plate: 25.0 to 32.0 pf
  - Plate-Filament: 3.4 to 4.2 pf
- **Maximum Ratings:**
  - Plate: 12,000 watts
- **Typical Operation:**
  - Plate: 12,000 watts
  - Grid: 100 watts
- **Cooling:** Forced Air
- **Type of Service:** RF Industrial Oscillator
- **Power:** 10,000 watts
- **Output Power:** 12,000 watts

### 8159 / 3CX10,000A3

**Characteristics**
- **Filament:** Thoriated tungsten
- **Voltage:** 7.5 volts
- **Current:** 39 to 41.0 amperes
- **Capacitances (Grounded Filament):**
  - Grid-Filament: 45.0 to 57.0 pf
  - Grid-Plate: 25.0 to 32.0 pf
- **Maximum Ratings:**
  - Plate: 12,000 watts
- **Typical Operation:**
  - Plate: 12,000 watts
  - Grid: 100 watts
- **Cooling:** Forced Air
- **Type of Service:** Power Amplifier
- **Power:** 10,000 watts
- **Output Power:** 12,000 watts

### 3CX10,000H3

**Characteristics**
- **Filament:** Thoriated tungsten
- **Voltage:** 7.5 volts
- **Current:** 16 to 18.0 amperes (max)
- **Capacitances:**
  - Grid-Filament: 60 pf
  - Grid-Plate: 38 pf
  - Plate-Filament: 1.5 pf
- **Maximum Ratings:**
  - Plate: 10,000 watts
- **Typical Operation:**
  - Plate: 10,000 watts
  - Grid: 700 watts
- **Cooling:** 90 MHz
- **Type of Service:** RF Industrial Oscillator
- **Power:** 7,000 watts
- **Output Power:** 7,400 watts

### 8160 / 3CX10,000A7

**Characteristics**
- **Filament:** Thoriated tungsten
- **Voltage:** 7.5 volts
- **Current:** 16 to 18.0 amperes (max)
- **Capacitances (Grounded Filament):**
  - Grid-Filament: 63 pf
  - Grid-Plate: 41 pf
  - Plate-Filament: 0.15 pf
- **Maximum Ratings:**
  - Plate: 10,000 watts
- **Typical Operation:**
  - Plate: 10,000 watts
  - Grid: 700 watts
- **Cooling:** 140 MHz
- **Type of Service:** Power Amplifier
- **Power:** 7,000 watts
- **Output Power:** 7,400 watts

---

**Typical Operation**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Voltage (volts)</td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>Voltage Regulator Service</td>
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</tr>
<tr>
<td><strong>B</strong></td>
<td>Audio-Frequency Power Amplifier</td>
<td>7000</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Radio-Frequency Linear Power Amplifier, Grounded-Grid—SSB</td>
<td>7000</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>Radio-Frequency Power Amplifier</td>
<td>7000</td>
</tr>
</tbody>
</table>

---

**Notes:**
- *Two tubes.*
- **Socket:** Eimac SK-1300
- **Net Weight:** 8 lb.
### 3CX15,000A3

The 3CX15,000A3 is a medium-mu triode designed especially for RF heating service. Six amperes of dc plate current is available from a one kilowatt filament and the grid structure is rated at 500 watts. Adequate forced-air cooling permits 15 kilowatts of plate dissipation. The 3CX15,000A3 is also useful as a linear or plate-modulated rf amplifier.

**PLATE DISSIPATION**: 15,000 watts

**GRID DISSIPATION**: 500 watts

**FREQUENCY FOR MAXIMUM RATINGS**: 100 MHz

**COOLING**: Forced Air

### Characteristics

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid-Voltage (volts)</th>
<th>Grid-Current (amps)</th>
<th>Grid-Diss. (watts)</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Radio-Frequency Oscillator or Amplifier</td>
<td>12,000</td>
<td>6.0</td>
<td>15,000</td>
<td>500</td>
<td>10,000</td>
<td>4.8</td>
<td>2050</td>
</tr>
<tr>
<td>A</td>
<td>Power Amplifier (Carrier Conditions)</td>
<td>10,000</td>
<td>20,000</td>
<td>25,000</td>
<td>12,000</td>
<td>6.0</td>
<td>15,000</td>
<td>500</td>
</tr>
</tbody>
</table>

### 3CX15,000H3

The 3CX15,000H3 is an air-cooled ceramic metal power triode designed primarily for use in industrial radio-frequency heating service. Its air-cooled anode is rated at 15,000 watts of plate dissipation. Plentiful reserve emission is available from its 1000 watt filament. The grid structure is rated at 500 watts making this tube an excellent choice for severe applications.

**PLATE DISSIPATION**: 15,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**: 90 MHz

**COOLING**: Forced Air

### Characteristics

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid-Voltage (volts)</th>
<th>Grid-Current (amps)</th>
<th>Grid-Diss. (watts)</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RF Industrial Oscillator</td>
<td>12,000</td>
<td>6.0</td>
<td>15,000</td>
<td>500</td>
<td>10,000</td>
<td>5.0</td>
<td>650</td>
</tr>
</tbody>
</table>

### 3CX20,000A3

The 3CX20,000A3 is a ceramic and metal air-cooled power triode intended for use in radio frequency heating, plate-modulated AM transmitters and grounded grid FM transmitter service.

**PLATE DISSIPATION**: 20,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**: 110 MHz

**COOLING**: Forced Air

### Characteristics

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid-Voltage (volts)</th>
<th>Grid-Current (amps)</th>
<th>Grid-Diss. (watts)</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Power Amplifier</td>
<td>12,000</td>
<td>9.0</td>
<td>20,000</td>
<td>750</td>
<td>11,000</td>
<td>6.8</td>
<td>1620</td>
</tr>
<tr>
<td>C</td>
<td>Plate-Modulated Radio Frequency Power Amplifier (Carrier Conditions)</td>
<td>6500</td>
<td>5.5</td>
<td>13,000</td>
<td>750</td>
<td>5500</td>
<td>5.0</td>
<td>1500</td>
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</tbody>
</table>

### 3CX20,000H3

The 3CX20,000H3 is a ceramic and metal air-cooled power triode intended for use in radio frequency heating and plate-modulated AM transmitters.

**PLATE DISSIPATION**: 20,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**: 110 MHz

**COOLING**: Forced Air

### Characteristics

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid-Voltage (volts)</th>
<th>Grid-Current (amps)</th>
<th>Grid-Diss. (watts)</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Power Amplifier</td>
<td>12,000</td>
<td>9.0</td>
<td>20,000</td>
<td>750</td>
<td>11,000</td>
<td>6.8</td>
<td>1620</td>
</tr>
</tbody>
</table>
EXTERNAI ANODE  WATER COOLED

6697A
This popular triode finds wide use in industrial and broadcast equipment. The 6697A is all ceramic-metal construction for increased tube reliability. The anode is constructed of copper disk fins; forced-air cooling is required for rated plate dissipation of 35 kilowatts.

PLATE DISSIPATION  35,000 watts
GRID DISSIPATION  750 watts
COOLING  30 MHz
FREQUENCY FOR MAXIMUM RATINGS

8240/3CW5000A1
The 3CW5000A1 is a water-cooled version of the 3CX3000A1 and is useful in audio service where water cooling is required for rated plate dissipation or where additional plate-dissipation capability is required. It is coaxial based and may be employed at maximum ratings through 75 MHz. The anode is constructed of copper disk fins; forced-air cooling is required for rated plate dissipation of 3000 watts or for similar service when water cooling is preferred.

PLATE DISSIPATION  5000 watts
GRID DISSIPATION  50 watts
COOLING  Water and Forced Air

8241/3CW5000F1
This water-cooled version of the 3CW5000F1 is for use in equipments where water is the preferred cooling medium or where additional plate-dissipation capability is required. It, too, is coaxial based and may be employed at maximum ratings through 75 MHz.

PLATE DISSIPATION  5000 watts
FREQUENCY FOR MAXIMUM RATINGS  75 MHz
COOLING  Water and Forced Air

8242/3CW5000A3
This water-cooled version of the 3CX2500A3 is for use in equipments where water is the preferred cooling medium or where additional plate-dissipation capability is required. It, too, is coaxial based and may be employed at maximum ratings through 75 MHz.

PLATE DISSIPATION  5000 watts
FREQUENCY FOR MAXIMUM RATINGS  75 MHz
COOLING  Water and Forced Air
8243/3CW5000F3

The 3CW5000F3 is a water-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 5000 watts of plate dissipation with low water flow and pressure drop. A power input of 12,600 watts is permissible up to 75 MHz. Plentiful reserve emission is available from its 500-watt filament.

3CW5000H3

The 3CW5000H3 is a water-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 5000 watts of plate dissipation with low water flow and pressure drop. A power input of 12,600 watts is permissible up to 75 MHz. Plentiful reserve emission is available from its 500-watt filament.

3CW10,000A3

The 3CW10,000A3 is a medium-mo water-cooled triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 10,000 watts of plate dissipation with low water flow and pressure drop. A power input of 30,000 watts is permissible up to 90 MHz. Plentiful reserve emission is available from its 375-watt filament.

3CW10,000H3

The 3CW10,000H3 is a water-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 10,000 watts of plate dissipation with low water flow and pressure drop. A power input of 30,000 watts is permissible up to 90 MHz. Plentiful reserve emission is available from its 375-watt filament.

CHARACTERISTICS

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Diss. (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Diss. (watts)</th>
<th>Drive Output Power (watts)</th>
<th>Power Output Power (watts)</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>Audio-Frequency Power Amplifier</td>
<td>6000</td>
<td>2.5</td>
<td>5000</td>
<td>150</td>
<td>6000</td>
<td>2.5</td>
<td>136</td>
<td>10,000</td>
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<tr>
<td>B</td>
<td>Audio-Frequency Power Amplifier and Modulator</td>
<td>6000</td>
<td>2.5</td>
<td>5000</td>
<td>150</td>
<td>6000</td>
<td>3.0</td>
<td>136</td>
<td>10,000</td>
</tr>
<tr>
<td>C</td>
<td>RF Industrial Oscillator</td>
<td>9000</td>
<td>2.0</td>
<td>3500</td>
<td>150</td>
<td>9000</td>
<td>1.45</td>
<td>75</td>
<td>5580</td>
</tr>
</tbody>
</table>

*Two tubes.
### 3CW20,000A1

The Eimac 3CW20,000A1 is a ceramic-metal low-mu power triode intended for use as a linear amplifier in audio or applications requiring high output power with zero driving power. It features a large thoriated-tungsten filament with ample reserve emission and an integral anode cooler with the inherent ability to withstand large overloads. This tube is particularly well suited for use in audio modulators and vibration testing equipment amplifiers supplying up to 75 kW of output power (two tubes, push-pull).

**Filament:** Thoriated tungsten
**Voltage:** 7.5 volts
**Current:** 90.0 to 100.0 amperes
**Capacitances (Grounded Filament):**
- Grid-Filament: 48.0 to 58.0 pf
- Grid-Plate: 30.0 to 38.0 pf
- Plate-Filament: 1.20 to 1.50 pf

**PLATE DISSIPATION:** 20,000 watts
**GRID DISSIPATION:** 100 watts

**COOLING:** Water and Forced Air

### 3CW20,000A3

Here is a ceramic-metal medium-mu triode designed for industrial-heating oscillator service. It features a large thoriated-tungsten filament with ample reserve emission and an integral anode cooler with the inherent ability to withstand large overloads. It is intended for use through 140 MHz, also as a grounded-grid FM amplifier developing 20 kilowatts useful output power.

**Filament:** Thoriated tungsten
**Voltage:** 7.5 volts
**Current:** 94.0 to 104.0 amperes
**Capacitances (Grounded Filament):**
- Grid-Filament: 48.0 to 58.0 pf
- Grid-Plate: 30.0 to 38.0 pf
- Plate-Filament: 1.20 to 1.50 pf

**PLATE DISSIPATION:** 20,000 watts
**GRID DISSIPATION:** 250 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 140 MHz
**COOLING:** Water and Forced Air

### 3CW20,000A7

The Eimac 3CW20,000A7 is a ceramic-metal zero-bias triode intended for use in grounded-grid linear amplifiers delivering 20 kilowatts of useful output power. Because of its low intermodulation distortion characteristics the 3CW20,000A7 is particularly well suited for single-sideband amplifiers. Two tubes operating in a push-pull audio amplifier under class-D zero-bias conditions will deliver up to 45 kilowatts of useful output power.

**Filament:** Thoriated tungsten
**Voltage:** 7.5 volts
**Current:** 94.0 to 104.0 amperes
**Capacitances (Grounded Filament):**
- Grid-Filament: 48.0 to 58.0 pf
- Grid-Plate: 30.0 to 38.0 pf
- Plate-Filament: 1.20 to 1.50 pf

**MAGNIFICATE PLATE DISSIPATION:** 20,000 watts
**GRID DISSIPATION:** 500 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 140 MHz
**COOLING:** Water and Forced Air

### 3CW20,000H3

The 3CW20,000H3 is a water-cooled, ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 20,000 watts plate dissipation with low water flow and pressure drop. The grid structure is rated at 250 watts making this tube an excellent choice for severe applications.

**Filament:** Thoriated tungsten
**Voltage:** 7.5 volts
**Current:** 104.0 amperes (max)
**Capacitances:**
- Grid-Filament: 58 pf
- Grid-Plate: 38 pf
- Plate-Filament: 1.5 pf

**PLATE DISSIPATION:** 20,000 watts
**FREQUENCY FOR MAXIMUM RATINGS:** 93 MHz
**COOLING:** Water and Forced Air

### Characteristics

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage (volts)</td>
<td>Current (amps)</td>
</tr>
<tr>
<td>A1 Audio-Frequency Power Amplifier</td>
<td>7000</td>
</tr>
<tr>
<td>Voltage Regulator Service</td>
<td>12,000</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><em>Two tubes.</em></td>
</tr>
</tbody>
</table>

*Up to 5 amperes depending on voltage drop across tube.*

**Characteristics**

- **Eimac Units:** SK-130C
- **Weight:** 12 pounds
- **Height:** 12 inches
- **Diameter:** 12 inches
- **Temperature:** 250 °C
**3CW25,000A3**

An integral water jacket allows an anode dissipation rating of 25 kilowatts with this new medium-mu, ceramic-metal triode. A 500 watt grid structure makes this tube attractive for industrial heating service. The tube is rated at 60 kilowatts of input power to 100 Mc with operation at slightly reduced ratings to 140 Mc.

**PLATE DISSIPATION** 25,000 watts

**GRID DISSIPATION** 500 watts

**FREQUENCY FOR MAXIMUM RATINGS** 100 MHz

**COOLING** Water and Forced Air

**3CW30,000H3**

The 3CW30,000H3 is a water-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 30,000 watts plate dissipation with low water flow and pressure drop. Input of 80,000 watts is permissible up to 90 MHz. The grid structure is rated at 500 watts.

**PLATE DISSIPATION** 30,000 watts

**FREQUENCY FOR MAXIMUM RATINGS** 90 MHz

**COOLING** Water and Forced Air

**3CW40,000H3**

The 3CW40,000H3 is a water-cooled ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its water-cooled anode is conservatively rated at 40,000 watts plate dissipation with low water flow and pressure drop. The grid structure is rated at 750 watts making this tube an excellent choice for severe applications.

**PLATE DISSIPATION** 40,000 watts

**FREQUENCY FOR MAXIMUM RATINGS** 90 MHz

**COOLING** Water and Forced Air

**6696A**

A rugged, all ceramic-metal, water-cooled triode, the 6696A is rated at 70 kilowatts input and 60 kilowatts plate dissipation to 140 MHz. It is attractive for general broadcast or industrial service where a high-power, medium mu triode is required. Accessories such as water jackets and terminal connectors are available from Eimac.

**PLATE DISSIPATION** 60,000 watts

**GRID DISSIPATION** 750 watts

**FREQUENCY FOR MAXIMUM RATINGS** 30 MHz

**COOLING** Water and Forced Air

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**3CW25,000A3**

- **Filament:** Thoriated tungsten
- **Voltage:** 6.3 volts
- **Current:** 152 to 168 amperes (max)
- **Capacitance (Grounded Filament):**
  - Grid-Filament: 48.0 to 58.0 pf
  - Grid-Plate: 30.0 to 38.0 pf
- **Grid-Plate:** 1.2 to 1.5 pf

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage (volts)</td>
<td>Drive Power (watts)</td>
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<tr>
<td></td>
<td></td>
<td>Plate Current (amps)</td>
<td>Output Power (watts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grid Diss. (watts)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grid Plate Voltage (volts)</td>
<td>Grid Power (watts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grid Plate Current (amps)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grid Plate Diss. (watts)</td>
<td></td>
</tr>
</tbody>
</table>

- **C** Radio-Frequency Oscillator or Amplifier
- **A** Radio-Frequency Linear Power Amplifier
- **O** Plate-Modulated RF Power Amplifier

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See the full document for detailed specifications and more information.
**3CV30,000A1**

The 3CV30,000A1 is a vapor-cooled triode with characteristics similar to the 3CX10,000A1. It has low mu value and is recommended for Class AB1, audio, or regulator service.

- **Plate Dissipation**: 30,000 watts
- **Cooling**: Vapor Phase and Air

**Characteristics**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
<th>Plate Dissipation</th>
<th>Grid Dissipation</th>
<th>Type of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5 volts</td>
<td>100 amperes</td>
<td>30,000 watts</td>
<td>30,000 watts</td>
<td>Audio Frequency Power Amplifier and Modulator</td>
</tr>
</tbody>
</table>

**Maximum Ratings**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
<th>Dissipation</th>
</tr>
</thead>
<tbody>
<tr>
<td>7000 volts</td>
<td>7000 amperes</td>
<td>30,000 watts</td>
</tr>
</tbody>
</table>

**Net Weight**: 18 pounds

**Maximum Envelope Temp.**: 250 °C

**Maximum Height**: 8.750 inches

**Maximum Diameter**: 7.750 inches

**Max. Diameter**: 18 pounds

**Base**: Coastal SK-1310

**Socket**: Eimac SK-1310

**Maximum Seal Temp.**: 250 °C

**Maximum Height**: 8.750 inches

**Maximum Diameter**: 7.750 inches

**Net Weight**: 22 pounds

**FREQUENCY FOR MAXIMUM RATINGS**: 100 MHz

**COOLING**: Vapor and Forced Air

---

**3CV30,000A3**

A vapor-cooled triode with a heavy, one kilowatt filament and 30 kW anode dissipation capability. It is highly recommended for heavy duty applications such as industrial, rf heating service. A complete line of accessories is available including boiler, condenser, etc., for simplified systems installation.

- **Plate Dissipation**: 30,000 watts
- **Frequency for Maximum Ratings**: 100 MHz
- **Cooling**: Vapor and Forced Air

**Characteristics**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
<th>Plate Dissipation</th>
<th>Grid Dissipation</th>
<th>Type of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3 volts</td>
<td>150 amperes</td>
<td>30,000 watts</td>
<td>30,000 watts</td>
<td>RF Industrial Oscillator</td>
</tr>
</tbody>
</table>

**Maximum Ratings**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
<th>Dissipation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000 volts</td>
<td>10,000 amperes</td>
<td>30,000 watts</td>
</tr>
</tbody>
</table>

**Net Weight**: 22 pounds

**Maximum Seal Temp.**: 250 °C

**Maximum Height**: 8.750 inches

**Maximum Diameter**: 7.750 inches

**Base**: Eimac SK-1310

**Socket**: Eimac SK-1310

**Maximum Seal Temp.**: 250 °C

**Maximum Height**: 8.750 inches

**Maximum Diameter**: 7.750 inches

**Net Weight**: 18 pounds

**FREQUENCY FOR MAXIMUM RATINGS**: 100 MHz

**COOLING**: Vapor and Forced Air

---

**3CV30,000H3**

The 3CV30,000H3 is a ceramic-metal power triode designed primarily for use in industrial radio-frequency heating service. Its vapor-cooled anode is conservatively rated at 30,000 watts plate dissipation when mounted in an Eimac BR-200 boiler.

- **Plate Dissipation**: 30,000 watts
- **Frequency for Maximum Ratings**: 100 MHz
- **Cooling**: Vapor and Forced Air

**Characteristics**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
<th>Plate Dissipation</th>
<th>Grid Dissipation</th>
<th>Type of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3 volts</td>
<td>172 amperes (max)</td>
<td>30,000 watts</td>
<td>30,000 watts</td>
<td>RF Industrial Oscillator</td>
</tr>
</tbody>
</table>

**Maximum Ratings**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
<th>Dissipation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000 volts</td>
<td>10,000 amperes</td>
<td>30,000 watts</td>
</tr>
</tbody>
</table>

**Net Weight**: 35 pounds

**Maximum Seal Temp.**: 250 °C

**Maximum Height**: 8.750 inches

**Maximum Diameter**: 7.750 inches

**Base**: Special SK-1310

**Socket**: Eimac SK-1310

**Maximum Seal Temp.**: 250 °C

**Maximum Height**: 8.750 inches

**Maximum Diameter**: 7.750 inches

**Net Weight**: 18 pounds

**FREQUENCY FOR MAXIMUM RATINGS**: 100 MHz

**COOLING**: Vapor and Forced Air

---

**7480**

This triode is rated at 140 kilowatts input and 80 kilowatts of plate dissipation at frequencies to 30 Mc. Boilers and other accessories are available for the 7480 from Eimac.

- **Plate Dissipation**: 80,000 watts
- **Grid Dissipation**: 750 watts
- **Frequency for Maximum Ratings**: 30 MHz
- **Cooling**: Vapor and Forced Air

**Characteristics**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
<th>Plate Dissipation</th>
<th>Grid Dissipation</th>
<th>Type of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.0 volts</td>
<td>200 amperes</td>
<td>80,000 watts</td>
<td>80,000 watts</td>
<td>Audio Frequency Power Amplifier or Modulator</td>
</tr>
</tbody>
</table>

**Maximum Ratings**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
<th>Dissipation</th>
</tr>
</thead>
<tbody>
<tr>
<td>16,000 volts</td>
<td>16,000 amperes</td>
<td>80,000 watts</td>
</tr>
</tbody>
</table>

**Net Weight**: 50 pounds

**Maximum Seal Temp.**: 250 °C

**Maximum Height**: 20.2 inches

**Maximum Diameter**: 7.1 inches

**Base**: Coastal SK-1310

**Socket**: Eimac SK-1310

**Maximum Seal Temp.**: 250 °C

**Maximum Height**: 20.2 inches

**Maximum Diameter**: 7.1 inches

**Net Weight**: 50 pounds

**FREQUENCY FOR MAXIMUM RATINGS**: 30 MHz

**COOLING**: Vapor and Forced Air

---

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (volts)</td>
<td>Current (amps)</td>
</tr>
<tr>
<td>7500 volts</td>
<td>7000 amperes</td>
</tr>
<tr>
<td>7000 volts</td>
<td>7000 amperes</td>
</tr>
<tr>
<td>5000 volts</td>
<td>5000 amperes</td>
</tr>
</tbody>
</table>

**Output Power (watts)**: 30,000 watts

**Two tubes**
## Tetrodes

### 8165/4-65A
A general-purpose radio-frequency power tetrode, the 4-65A is ideal forced-air, and forced-convection and may be used without forced air in most installations. Maximum ratings extend to 120 MHz.

**PLATE DISSIPATION**
- 65 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 150 MHz

**COOLING**
- Connection and Radiation

**CHARACTERISTICS**
- **Filament:** Thoriaed tungsten
- **Voltage:** 6.0 volts
- **Current:** 2.2 to 2.8 amperes
- **Input:** 1.9 to 2.5 pf
- **Output:** 0.17 pf
- **Base:** 6-pin
- **Socket:** National HX100 or Johnson 122-275
- **Max. Base-Seal Temp.:** 170 °C.
- **Max. Envelope Temp.:** 225 °C.
- **Max. Height:** 4.38 inches
- **Net Weight:** 3 ounces
- **Max. Diameter:** 3.56 inches

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amp)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amp)</th>
<th>Grid-Dissipation (watts)</th>
<th>Grid-Dissipation (watts)</th>
<th>Drive Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB, Audio-Frequency Power Amplifier and Modulator</td>
<td>3000</td>
<td>0.150</td>
<td>65</td>
<td>10</td>
<td>-</td>
<td>1750</td>
<td>500</td>
<td>0.170*</td>
</tr>
<tr>
<td>AB, Audio-Frequency Linear Power Amplifier</td>
<td>3000</td>
<td>0.150</td>
<td>65</td>
<td>10</td>
<td>-</td>
<td>3000</td>
<td>360</td>
<td>0.065</td>
</tr>
<tr>
<td>AB, Audio-Frequency Power Amplifier and Modulator</td>
<td>3000</td>
<td>0.150</td>
<td>65</td>
<td>10</td>
<td>5</td>
<td>1800</td>
<td>250</td>
<td>0.125*</td>
</tr>
<tr>
<td>C, Radio-Frequency Power Amplifier and Oscillator</td>
<td>3000</td>
<td>0.150</td>
<td>65</td>
<td>10</td>
<td>5</td>
<td>3000</td>
<td>250</td>
<td>0.115</td>
</tr>
<tr>
<td>C, Plate-Modulated R-F Power Amplifier</td>
<td>3750</td>
<td>0.120</td>
<td>45</td>
<td>10</td>
<td>5</td>
<td>2500</td>
<td>250</td>
<td>0.110</td>
</tr>
</tbody>
</table>

### 4D21/4-125A

This 125 watt general-purpose power tetrode is usable at maximum ratings to 120 MHz. Its low interelectrode capacitances make it ideal for amplifier service but it is equally useful in audio applications.

**PLATE DISSIPATION**
- 125 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 120 MHz

**COOLING**
- Radiation and Forced Air

**CHARACTERISTICS**
- **Filament:** Thoriaed tungsten
- **Voltage:** 10.7 to 14.5 volts
- **Current:** 3.71 to 4.65 amperes
- **Input:** 0.14 pf
- **Output:** 0.25 pf
- **Base:** 5-pin metal shell
- **Socket:** National HX100 or Johnson 122-101
- **Max. Height:** 5.69 inches
- **Net Weight:** 8 ounces
- **Max. Diameter:** 3.56 inches
- **Max. Envelope Temp.:** 225 °C.
- **Max. Base-Seal Temp.:** 170 °C.

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amp)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amp)</th>
<th>Grid-Dissipation (watts)</th>
<th>Grid-Dissipation (watts)</th>
<th>Drive Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB, Audio-Frequency Power Amplifier and Modulator</td>
<td>3000</td>
<td>0.225</td>
<td>125</td>
<td>20</td>
<td>0</td>
<td>2500</td>
<td>600</td>
<td>0.135*</td>
</tr>
<tr>
<td>AB, Audio-Frequency Linear Power Amplifier and Modulator</td>
<td>3000</td>
<td>0.225</td>
<td>125</td>
<td>20</td>
<td>0</td>
<td>3000</td>
<td>510</td>
<td>0.105</td>
</tr>
<tr>
<td>AB, Audio-Frequency Power Amplifier and Modulator</td>
<td>3000</td>
<td>0.225</td>
<td>125</td>
<td>20</td>
<td>5</td>
<td>2500</td>
<td>300</td>
<td>0.080*</td>
</tr>
<tr>
<td>C, Radio-Frequency Power Amplifier and Oscillator</td>
<td>3000</td>
<td>0.225</td>
<td>125</td>
<td>20</td>
<td>5</td>
<td>3000</td>
<td>350</td>
<td>0.167</td>
</tr>
<tr>
<td>C, Plate-Modulated R-F Power Amplifier</td>
<td>3750</td>
<td>0.200</td>
<td>85</td>
<td>20</td>
<td>5</td>
<td>2500</td>
<td>350</td>
<td>0.152</td>
</tr>
</tbody>
</table>

### 6155A

This 125 watt general-purpose power tetrode is usable at maximum ratings to 120 MHz. Its low interelectrode capacitances make it ideal for amplifier service but it is equally useful in audio applications.

**PLATE DISSIPATION**
- 125 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 120 MHz

**COOLING**
- Forced Air

**CHARACTERISTICS**
- **Filament:** Thoriaed tungsten
- **Voltage:** 6.0 volts
- **Current:** 7.8 to 14.5 amperes
- **Input:** 0.17 pf
- **Output:** 0.17 pf
- **Base:** 4-pin
- **Socket:** National HX100 or Johnson 122-275
- **Max. Height:** 6.38 inches
- **Net Weight:** 3 ounces
- **Max. Diameter:** 3.56 inches
- **Max. Envelope Temp.:** 225 °C.
- **Max. Base-Seal Temp.:** 170 °C.

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amp)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amp)</th>
<th>Grid-Dissipation (watts)</th>
<th>Grid-Dissipation (watts)</th>
<th>Drive Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB, Audio-Frequency Power Amplifier and Modulator</td>
<td>3000</td>
<td>0.225</td>
<td>125</td>
<td>20</td>
<td>0</td>
<td>2500</td>
<td>600</td>
<td>0.135*</td>
</tr>
<tr>
<td>AB, Audio-Frequency Linear Power Amplifier and Modulator</td>
<td>3000</td>
<td>0.225</td>
<td>125</td>
<td>20</td>
<td>0</td>
<td>3000</td>
<td>510</td>
<td>0.105</td>
</tr>
<tr>
<td>AB, Audio-Frequency Power Amplifier and Modulator</td>
<td>3000</td>
<td>0.225</td>
<td>125</td>
<td>20</td>
<td>5</td>
<td>2500</td>
<td>300</td>
<td>0.080*</td>
</tr>
<tr>
<td>C, Radio-Frequency Power Amplifier and Oscillator</td>
<td>3000</td>
<td>0.225</td>
<td>125</td>
<td>20</td>
<td>5</td>
<td>3000</td>
<td>350</td>
<td>0.167</td>
</tr>
<tr>
<td>C, Plate-Modulated R-F Power Amplifier</td>
<td>3750</td>
<td>0.200</td>
<td>85</td>
<td>20</td>
<td>5</td>
<td>2500</td>
<td>350</td>
<td>0.152</td>
</tr>
</tbody>
</table>

### 5D22/4-250A

The Einem 4-250A enjoys a 250 watt plate dissipation rating and is usable at maximum ratings through the FM broadcast band. Its low interelectrode capacitances make it an ideal choice for high-frequency applications but it is often used in audio-amplifier work as well.

**PLATE DISSIPATION**
- 250 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 110 megacycles

**COOLING**
- Radiation and Forced Air

**CHARACTERISTICS**
- **Filament:** Thoriaed tungsten
- **Voltage:** 5.0 volts
- **Current:** 3.55 amperes
- **Input:** 0.16 pf
- **Output:** 0.25 pf
- **Base:** 5-pin metal shell
- **Socket:** Einem SA-200
- **Max. Base-Seal Temp.:** 170 °C.
- **Max. Envelope Temp.:** 275 °C.
- **Max. Height:** 6.98 inches
- **Net Weight:** 5 ounces
- **Max. Diameter:** 3.56 inches
- **Max. Envelope Temp.:** 275 °C.
- **Max. Base-Seal Temp.:** 170 °C.

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amp)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amp)</th>
<th>Grid-Dissipation (watts)</th>
<th>Grid-Dissipation (watts)</th>
<th>Drive Output Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB, Audio-Frequency Power Amplifier and Modulator</td>
<td>4000</td>
<td>0.350</td>
<td>250</td>
<td>35</td>
<td>0</td>
<td>3000</td>
<td>600</td>
<td>0.417*</td>
</tr>
<tr>
<td>AB, Einem Linear Power Amplifier and Modulator</td>
<td>4000</td>
<td>0.350</td>
<td>250</td>
<td>35</td>
<td>0</td>
<td>4000</td>
<td>110</td>
<td>0.165</td>
</tr>
<tr>
<td>AB, Audio-Frequency Power Amplifier and Modulator</td>
<td>4000</td>
<td>0.350</td>
<td>250</td>
<td>35</td>
<td>10</td>
<td>3000</td>
<td>300</td>
<td>0.473*</td>
</tr>
<tr>
<td>C, Radio-Frequency Power Amplifier and Oscillator</td>
<td>4000</td>
<td>0.350</td>
<td>250</td>
<td>35</td>
<td>10</td>
<td>4000</td>
<td>600</td>
<td>0.372</td>
</tr>
<tr>
<td>C, Plate-Modulated R-F Power Amplifier</td>
<td>3200</td>
<td>0.275</td>
<td>165</td>
<td>35</td>
<td>10</td>
<td>3000</td>
<td>400</td>
<td>0.225</td>
</tr>
</tbody>
</table>

*Two Tubes.*
The Eimac 6156 is a compact, ruggedly constructed power tetrode having a maximum plate dissipation rating of 250 watts. It is intended for use as an amplifier, oscillator or modulator.

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten
- **Voltage:** 5.0 volts
- **Current:** 13.5 to 14.7 amperes
- **Capacitances (Grounded Filament):**
  - Input: 12.5 pf
  - Output: 6.7 pf
- **Feed-Through:** 0.14 pf
- **Base:** 5-pin metal shell
- **Socket:** Eimac SK-400
- **Max. Base Seal Temp.:** 170 °C
- **Max. Envelope Temp.:** 225 °C
- **Max. Diameter:** 3.422 inches
- **Max. Height:** 5.962 inches
- **Max. Envelope Temp.:** 225 °C
- **Max. Base Seal Temp.:** 170 °C
- **Net Weight:** 6.7 ounces
- **Max. Diameter:** 3.422 inches
- **Max. Height:** 5.962 inches
- **Net Weight:** 6.7 ounces

**PLATE DISSIPATION:** 250 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 110 MHz

**COOLING:** Radiation and Forced Air

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**6438 / 4-400A**

A 400-watt general purpose radial-beam tetrode, the 4-400A is ideal for any rf application below 110 MHz. Its ratings allow an input power of up to 1400 watts in such service or in others where lower radio frequencies or audio frequencies are to be amplified.

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten
- **Voltage:** 5.0 volts
- **Current:** 13.5 to 14.7 amperes
- **Capacitances (Grounded Filament):**
  - Input: 12.5 pf
  - Output: 6.7 pf
- **Feed-Through:** 0.14 pf
- **Base:** 5-pin metal shell
- **Socket:** Eimac SK-400
- **Max. Base Seal Temp.:** 170 °C
- **Max. Envelope Temp.:** 225 °C
- **Max. Diameter:** 3.422 inches
- **Max. Height:** 5.962 inches
- **Max. Envelope Temp.:** 225 °C
- **Max. Base Seal Temp.:** 170 °C
- **Net Weight:** 6.7 ounces

**PLATE DISSIPATION:** 400 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 110 MHz

**COOLING:** Radiation and Forced Air

---

**7527**

The 7527 is an all glass power tetrode designed for amplifier, oscillator or modulator service. This tube is capable of operation at full ratings up to 110 MHz.

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten
- **Voltage:** 5.0 volts
- **Current:** 13.5 to 14.7 amperes
- **Capacitances (Grounded Filament):**
  - Input: 12.5 pf
  - Output: 6.7 pf
- **Feed-Through:** 0.14 pf
- **Base:** 5-pin special
- **Socket:** Johnson 122-275
- **Max. Base Seal Temp.:** 170 °C
- **Max. Envelope Temp.:** 225 °C
- **Max. Diameter:** 3.422 inches
- **Max. Height:** 5.962 inches
- **Max. Diameter:** 3.422 inches
- **Max. Height:** 5.962 inches
- **Net Weight:** 6.7 ounces

**PLATE DISSIPATION:** 400 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 110 MHz

**COOLING:** Radiation and Forced Air

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**6775**

The 6775 is a ruggedized version of the 4-400A power tetrode which can be used as a direct replacement.

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten
- **Voltage:** 5.0 volts
- **Current:** 13.5 to 14.7 amperes
- **Capacitances (Grounded Filament):**
  - Input: 12.5 pf
  - Output: 6.7 pf
- **Feed-Through:** 0.14 pf
- **Base:** EIA A5.97
- **Socket:** Eimac SK-400
- **Max. Base Seal Temp.:** 170 °C
- **Max. Envelope Temp.:** 225 °C
- **Max. Diameter:** 3.422 inches
- **Max. Height:** 5.962 inches
- **Net Weight:** 6.7 ounces

**PLATE DISSIPATION:** 400 watts

**FREQUENCY FOR MAXIMUM RATINGS:** 110 MHz

**COOLING:** Radiation and Forced Air

---
8166/4-1000A

This high-power general-purpose tetrode is capable of dissipating 1000 watts from its radiation-cooled anode. Maximum ratings apply through the FM broadcast band but in low line-power requirements make it an ideal choice for audio and low-frequency applications as well.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATING 1000 watts 113 MHz

CHARACTERISTICS
Filament: Thoriated tungsten Voltage 7.5 volts Current 23.0 to 27.7 amperes Capacitances (grounded grid): Input 23.6 to 32.4 pf Output 6.8 to 9.4 pf Feed-through 0.35 pf

8560A

The 8560A is a conduction cooled, general-purpose tetrode. This compact power tube can be used at maximum ratings at frequencies up to 500 MHz. It is recommended for use in equipments of compact power tube can be used at maximum ratings at frequencies up to 500 MHz. It is recommended for use in equipments of

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATING 15 watts 500 MHz

CHARACTERISTICS
Cathode: Oxide-coated, unipotential Heater: 6.0 volts Voltage 2.5 to 3.1 amperes Capacitances (grounded cathode): Input 15.6 to 23.7 pf Output 4.0 to 6.5 pf Feed-through 0.065 pf

EXTERNAL ANODE I CONDUCTION COOLED

4CN15A

A special version of the popular 4CN15A intended for use in low-duty cycle applications or where size and weight are important. The 4CN15A carries a nominal plate-dissipation rating of 15 watts but this may be extended by employing liquid immersion or another suitable heat sink. Its rugged design makes it ideal for applications where shock and/or vibration are encountered.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATING 15 watts 500 MHz

CHARACTERISTICS
Cathode: Oxide-coated, unipotential Heater: 6.0 volts Voltage 2.5 to 3.1 amperes Capacitances (grounded cathode): Input 15.6 to 23.7 pf Output 4.0 to 6.5 pf Feed-through 0.065 pf

7843

The 7843 is a small coastal power tetrode designed for UHF power amplifier and oscillator service up to 1200 MHz. Its coaxial construction makes this tube suitable for cavity circuits.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATING 115 watts 1200 MHz

CHARACTERISTICS
Cathode: Oxide-coated, unipotential Heater: 26.5 volts Voltage 0.45 to 0.57 amperes Capacitances (grounded cathode): Input 27.3 to 29.7 pf Output 4.0 to 5.6 pf Feed-through 0.065 pf

8560A

This tube has a flat surface on the edge of the anode for contact to a suitable thermal conductor, usually a wafer of beryllium oxide. The dimension of the flat surface is 0.90 = 0.0001 inches. Thermal design should insure that for maximum expected anode dissipation, heat flow through the beryllium oxide wafer will be high enough to dissipate that power with no more than 225°C temperature at the interface between anode and beryllium oxide wafer.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATING

CHARACTERISTICS
Cathode: Oxide-coated, unipotential Heatsource: 500 volts Voltage 0.0 volts Capacitances (grounded cathode): Input 16.5 pf Output 9.0 pf Feed-through 9.04 pf

TETRODES

INTERNAL ANODE

8166/4-1000A

This high-power general-purpose tetrode is capable of dissipating 1000 watts from its radiation-cooled anode. Maximum ratings apply through the FM broadcast band but in low line-power requirements make it an ideal choice for audio and low-frequency applications as well.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATING 1000 watts 113 MHz

CHARACTERISTICS
Filament: Thoriated tungsten Voltage 7.5 volts Current 23.0 to 27.7 amperes Capacitances (grounded grid): Input 23.6 to 32.4 pf Output 6.8 to 9.4 pf Feed-through 0.35 pf

8560A

The 8560A is a conduction cooled, general-purpose tetrode. This compact power tube can be used at maximum ratings at frequencies up to 500 MHz. It is recommended for use in equipments of compact power tube can be used at maximum ratings at frequencies up to 500 MHz. It is recommended for use in equipments of

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATING 15 watts 500 MHz

CHARACTERISTICS
Cathode: Oxide-coated, unipotential Heater: 6.0 volts Voltage 2.5 to 3.1 amperes Capacitances (grounded cathode): Input 15.6 to 23.7 pf Output 4.0 to 6.5 pf Feed-through 0.065 pf

EXTERNAL ANODE I CONDUCTION COOLED

4CN15A

A special version of the popular 4CN15A intended for use in low-duty cycle applications or where size and weight are important. The 4CN15A carries a nominal plate-dissipation rating of 15 watts but this may be extended by employing liquid immersion or another suitable heat sink. Its rugged design makes it ideal for applications where shock and/or vibration are encountered.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATING 15 watts 500 MHz

CHARACTERISTICS
Cathode: Oxide-coated, unipotential Heater: 6.0 volts Voltage 2.5 to 3.1 amperes Capacitances (grounded cathode): Input 15.6 to 23.7 pf Output 4.0 to 6.5 pf Feed-through 0.065 pf

7843

The 7843 is a small coastal power tetrode designed for UHF power amplifier and oscillator service up to 1200 MHz. Its coaxial construction makes this tube suitable for cavity circuits.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATING 115 watts 1200 MHz

CHARACTERISTICS
Cathode: Oxide-coated, unipotential Heater: 26.5 volts Voltage 0.45 to 0.57 amperes Capacitances (grounded cathode): Input 27.3 to 29.7 pf Output 4.0 to 5.6 pf Feed-through 0.065 pf

8560A

This tube has a flat surface on the edge of the anode for contact to a suitable thermal conductor, usually a wafer of beryllium oxide. The dimension of the flat surface is 0.90 = 0.0001 inches. Thermal design should insure that for maximum expected anode dissipation, heat flow through the beryllium oxide wafer will be high enough to dissipate that power with no more than 225°C temperature at the interface between anode and beryllium oxide wafer.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATING

CHARACTERISTICS
Cathode: Oxide-coated, unipotential Heatsource: 500 volts Voltage 0.0 volts Capacitances (grounded cathode): Input 16.5 pf Output 9.0 pf Feed-through 9.04 pf
**EXTERNAL ANODE CONDUCTION COOLED**

### 4CS250H and 4CS250HA

The 4CS250H and 4CS250HA are conduction-cooled tetrodes having the basic electrical characteristics of the 4CX350A. These tubes are intended primarily for class AB linear service. They have high transconductance and produce full output with extremely low drive power.

### PLATE DISSIPATION

**Cooling:** Conduction

**Maximum Ratings:**
- 250 watts

**Characteristics:**
- **Cathode:** Oxide-coated, unipotential
- **Heater:** Special 9-pin
- **Input Capacitance:** 26.2 pF (max)
- **Output Capacitance:** 6.0 pF (max)
- **Feed Through Capacitance:** 0.03 pF

### Class of Use Type of Operation

- Class of Use: **AB, AF Power Amplifier and Modulator**
- **Typical Operation:**
  - **Plate Voltage:** 2500 volts
  - **Plate Current:** 0.300 amps
  - **Screen Grid Voltage:** 500 volts
  - **Dissipation:** 2.0 watts

### 4CX125C and 4CX125F

The 4CX125C is a horizontally-finned version of the 4CX300A and is intended for use where transverse air cooling is desired. It is also useful where anode power is dissipated by liquid immersion. Its electrical characteristics are identical to those of the 4CX300A with the exception of plate dissipation which is established at 125 watts with air cooling. It is ideally suited for applications where shock and/or vibration are experienced. The 4CX125F is an identical tube with a 26.5 volt heater.

### PLATE DISSIPATION

**Cooling:** Forced Air

**Maximum Ratings:**
- 125 watts

**Characteristics:**
- **Cathode:** Oxide-coated, unipotential
- **Heater:** 4CX125C 4CX125F Socket 3948-000
- **Input Capacitance:** 25.5 pF (max)
- **Output Capacitance:** 2.5 to 3.2 pF
- **Feed Through Capacitance:** 0.065 pF

### 6816

The 6816 is a small coaxial power tetrode designed for UHF power amplifier and oscillator service up to 1200 MHz. Coaxial construction makes this tube suitable for cavity circuits.

### PLATE DISSIPATION

**Cooling:** Forced Air

**Maximum Ratings:**
- 115 watts

**Characteristics:**
- **Cathode:** Oxide-coated, unipotential
- **Heater:** Coaxial Socket 2948-000
- **Input Capacitance:** 26.2 pF (max)
- **Output Capacitance:** 2.0 pF (max)
- **Feed Through Capacitance:** 0.065 pF

### 6884

The 6884 is a small coaxial tetrode designed for UHF power amplifier and oscillator service up to 1200 MHz. The coaxial construction makes this tube suitable for cavity circuits. This tube is identical to the 6816 except for heater voltage.

### PLATE DISSIPATION

**Cooling:** Forced Air

**Maximum Ratings:**
- 115 watts

**Characteristics:**
- **Cathode:** Oxide-coated, unipotential
- **Heater:** Coaxial Socket 2948-000
- **Input Capacitance:** 28.7 pF (max)
- **Output Capacitance:** 5.0 pF (max)
- **Feed Through Capacitance:** 0.065 pF

### Class of Use Type of Operation

- Class of Use: **RF Power Amplifier and Oscillator**
- **Typical Operation:**
  - **Plate Voltage:** 900 volts
  - **Plate Current:** 0.170 amp
  - **Screen Grid Voltage:** 300 volts
  - **Dissipation:** 40 watts

---

**TETRODES**

**EXTERNAL ANODE FORCED-AIR COOLED**

The 6816 and 6884 are small coaxial tetrodes designed for UHF power amplifier and oscillator service up to 1200 MHz. The coaxial construction makes this tube suitable for cavity circuits.

### PLATE DISSIPATION

**Cooling:** Forced Air

**Maximum Ratings:**
- 115 watts

**Characteristics:**
- **Cathode:** Oxide-coated, unipotential
- **Heater:** Coaxial Socket 2948-000
- **Input Capacitance:** 28.7 pF (max)
- **Output Capacitance:** 5.0 pF (max)
- **Feed Through Capacitance:** 0.065 pF

### Class of Use Type of Operation

- Class of Use: **RF Power Amplifier and Oscillator**
- **Typical Operation:**
  - **Plate Voltage:** 900 volts
  - **Plate Current:** 0.170 amp
  - **Screen Grid Voltage:** 300 volts
  - **Dissipation:** 40 watts
7034/4X150A and 7035/4X150D

The品种 of external anode tetrodes, and an Eimac original, contributes to its desirable properties. Recent tube manufacturers have made possible increases in maximum plate voltage and plate current ratings. In Class-AB or Class-C service the maximum power of 500 watts is now allowed at frequencies up to 150 MHz. The 4X150D is a 26.5 volt heater version of the 4X150.

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Plate DISSIPATION</th>
<th>FREQUENCY FOR MAXIMUM RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode: Oxide-coated, unipotential</td>
<td>350 watts</td>
<td>150 MHz</td>
</tr>
<tr>
<td>Heater: 4X150R 4X150S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>2.5 volts</td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>0.200 to 0.250 amperes</td>
<td></td>
</tr>
<tr>
<td>Capacitance (Grounded Cathode):</td>
<td>0.01 pf</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>4.0 to 4.9 pf</td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>0.06 pf</td>
<td></td>
</tr>
</tbody>
</table>

8172/4X150G

One of the features in external anode control grid tetrodes, the 4X150G continues to deliver long life and high reliability at voltages up to 2200 volts and is useful in pulse service at frequencies up to 1500 MHz.

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Plate DISSIPATION</th>
<th>FREQUENCY FOR MAXIMUM RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode: Oxide-coated, unipotential</td>
<td>250 watts</td>
<td>500 MHz CW</td>
</tr>
<tr>
<td>Heater: 4X150R 4X150S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>2.5 volts</td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>0.200 to 0.250 amperes</td>
<td></td>
</tr>
<tr>
<td>Capacitance (Grounded Cathode):</td>
<td>0.01 pf</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>4.0 to 4.9 pf</td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>0.06 pf</td>
<td></td>
</tr>
</tbody>
</table>

8296/4X150R and 8297/4X150S

This Eimac tube is a re-arranged version of the famous 4X150A it incorporates construction features found in the 4X250 and 4X250S resulting in a tube capable of operating at full voltages in environments where moderate shock and vibration are present. The 4X150R will replace the 4X150A in nearly all applications since it is electrically identical except for a small (1.75 ohm increase in input capacitance limits in feed-through capacitors (0.01 pf) and in the maximum power limits). The 4X150S is identical but incorporates a 250 watt heater for mobile or airborne applications.

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Plate DISSIPATION</th>
<th>FREQUENCY FOR MAXIMUM RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode: Oxide-coated, unipotential</td>
<td>250 watts</td>
<td>150 MHz</td>
</tr>
<tr>
<td>Heater: 4X150R 4X150S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>2.5 volts</td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>0.200 to 0.250 amperes</td>
<td></td>
</tr>
<tr>
<td>Capacitance (Grounded Cathode):</td>
<td>0.01 pf</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>4.0 to 4.9 pf</td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>0.06 pf</td>
<td></td>
</tr>
</tbody>
</table>

7203/4X250B and 7204/4X250F

A 250 watt general purpose output anode tube featuring ceramic-metal construction. This compact power tube can be used at maximum ratings at frequencies up to 150 MHz. It is recommended for use in equipments of new design. The 4X250F is isolectrical in all respects except for a heater rated at 26.5 volts. 

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Plate DISSIPATION</th>
<th>FREQUENCY FOR MAXIMUM RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode: Oxide-coated, unipotential</td>
<td>250 watts</td>
<td>500 MHz</td>
</tr>
<tr>
<td>Heater: 4X250B 4X250F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>2.5 volts</td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>0.200 to 0.250 amperes</td>
<td></td>
</tr>
<tr>
<td>Capacitance (Grounded Cathode):</td>
<td>0.01 pf</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>4.0 to 4.9 pf</td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>0.06 pf</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CLASS OF OPERATION</th>
<th>TYPE OF SERVICE</th>
<th>PLATE VOLTAGE (volts)</th>
<th>PLATE CURRENT (amps)</th>
<th>PLATE DISSIPATION (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>Audio-Frequency Power Amplifier and Modulator</td>
<td>2000 0.250 250 12</td>
<td>2000 350 0.500* 0 600*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Audio-Frequency Linear Power Amplifier - SSB</td>
<td>2000 0.250 250 12</td>
<td>2000 350 0.250 0 300</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Radio-Frequency Power Amplifier and Oscillator</td>
<td>2000 0.250 250 12 2</td>
<td>2000 250 0.250 2.9 300</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power Amplifier</td>
<td>1500 0.150 165 12 2</td>
<td>1500 250 0.200 1.7 235</td>
<td></td>
</tr>
</tbody>
</table>

*Two tubes.
TETRODES

EXTERNA1 ANODE II FORCED-AIR COOLED

8621/4CX250FG

The 4CX250FG is essentially a 4CX250F manufactured for extra stability in airborne linear amplifier service. Plate Dissipation

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

8621/4CX250FG

The 4CX250FG is essentially a 4CX250F manufactured for extra stability in airborne linear amplifier service. Plate Dissipation

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

7580W/4CX250R

4CX250R is a rugged version of the 7580. It is intended for use in environments where shock and vibration levels prevent the use of such a tube as the 4CX250R, and where the size of a high-vacuum tube is indicated. The 4CX250R is designed to operate with maximum rated plate and screen voltages applied in equipment where shock and/or vibration is experienced. Plate Dissipation

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

7609

The 7609 is a power tetrode intended for use as an amplifier or oscillator at full ratings up to 150 MHz. Useful power can be obtained at reduced ratings up to 500 MHz. Plate Dissipation

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

8245/4CX250K and 8246/4CX250M

These general purpose tubes are particularly useful as a CW rf- amplifier between 500 and 1200 MHz, in pulse applications, the useful frequency is above 1500 MHz. The 4CX250K employs a 5.0 volt heater while the 4CX250M uses a 26.5 volt heater. Plate Dissipation

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)

Class of Operation Type of Service

Max. Ratings
Plate Plate Plate Screen Grid
Current (amps) (volts) (watts) (watts)

Typical Operation
Plate Plate Plate Screen Grid
Voltage Current Dis. Dis. (volts) (amps) (watts) (watts)
TETRODES
EXTERNAL ANODE • FORCED-AIR COOLED

4CX250K
This tube is a pulse-rated version of the coaxial 4CX250. New cathode techniques permit pulse currents of over three amperes for pulse lengths up to 250 microseconds. Peak power output of 10GW is available at 0.005 duty.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATINGS
COOLING

CHARACTERISTICS
Cathode: Oxide-coated, unsuppressed Base: Special unipotential
Heater: 6.0 volts Voltage: Max. Seal Temp.: 225 °C
Current: 2.3 to 3.0 amperes
Capacitance (Grounded Grid): Input: 14.5 to 15.6 pf
Max. Height: 3.833 inches
Output: 3.9 to 4.1 pf Max. Diameter: 1.640 inches
Feed-Through: 0.01 pf Net Weight: 4 ounces

8167/4CX300A
This rugged ceramic-metal tetrode with unique breechlock having its electrical characteristics similar to other tubes in the 4KX65 and 4K250 families but is especially suited for service in severe environments. Its unusual internal construction assures reliable operation at acceleration levels up to 30 g. Suitable for service from dc to 600 Mhz, the 4CX300 is first choice for use in new equipment where shock and/or vibration are expected.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATINGS
COOLING

CHARACTERISTICS
Cathode: Oxide-coated, unipotential Base: Special breechlock
Heater: 6.0 volts Voltage: Max. Seal Temp.: 225 °C
Current: 2.5 to 3.4 amperes
Capacitance (Grounded Grid): Input: 26 to 30 pf
Max. Height: 2.5 inches
Output: 3.3 to 4.6 pf Max. Diameter: 1.65 inches
Feed-Through: 0.06 pf Net Weight: 4 ounces

8072
The 8072 is a conduction cooled ceramic and metal power tetrode designed for use in radio frequency power amplifiers, oscillator and linear RF power amplifier service.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATINGS
COOLING

CHARACTERISTICS
Cathode: Oxide-coated, unsuppressed Base: 14.0 volts
Heater: 13.5 volts Voltage: Max. Seal Temp.: 225 °C
Current: 2.3 to 3.3 amperes Capacitance (Grounded Grid): Input: 14.0 pf
Max. Height: 2.25 inches
Output: 4.5 to 5.6 pf Max. Diameter: 1.64 inches
Feed-Through: 0.01 pf Net Weight: 4 ounces

NOTE:
Maximum plate dissipation is limited by maximum anode core temperature which is dependent on the type of conduction cooling employed. With a suitable thermal conductor, such as beryllium oxide, the thermal design should ensure that the maximum expected anode dissipation, heat flow through the beryllium oxide thermal conductor will be sufficient to dissipate that power with no more than 225 °C at the interface between anode and beryllium oxide.
## TETRODES

### EXTERNAL ANODE | FORCED-AIR COOLED

#### 8121 and 8122

The 8121 and 8122 are ceramic and metal air-cooled power tetrodes intended for use in radio-frequency power amplifier, oscillator and linear RF power amplifier service. 

**PLATE DISSIPATION**
- 8121: 150 watts
- 8122: 400 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 500 MHz

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Dissipation (watts)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amps)</th>
<th>Screen Dissipation (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Dissipation (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Radio-Frequency Power Amplifier and Oscillator</td>
<td>8121</td>
<td>2200</td>
<td>0.750</td>
<td>105</td>
<td>5.0</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>AB Linear Radio-Frequency Amplifier</td>
<td>8122</td>
<td>2200</td>
<td>0.350</td>
<td>150</td>
<td>8.0</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: Use a bypassed cathode resistor of approximately 11 ohms.

#### 8321 / 4CX350A and 8322 / 4CX350F

These tubes are externally identical to the 4CX350B but contain more rugged internal construction. These tetrodes are intended primarily for Class AB linear RF power amplifier service.

**PLATE DISSIPATION**
- 350 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 500 MHz

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Dissipation (watts)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amps)</th>
<th>Screen Dissipation (watts)</th>
<th>Grid Voltage (volts)</th>
<th>Grid Current (amps)</th>
<th>Grid Dissipation (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB1, Audio-Frequency Power Amplifier and Modulator</td>
<td>8321</td>
<td>2000</td>
<td>0.4</td>
<td>150</td>
<td>8</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>AB2, Radio-Frequency Linear Power Amplifier</td>
<td>8322</td>
<td>2000</td>
<td>0.4</td>
<td>150</td>
<td>8</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

*In grid driven circuit at 470 MHz

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Dissipation (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Special, breechblock</td>
<td>4CX350B 4CX350F</td>
<td>250-260</td>
<td>0.4</td>
<td>150</td>
</tr>
<tr>
<td>Max. Height 2.46 inches</td>
<td>250 °C</td>
<td>Max. Diameter 1.84 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Anode-Cone Temp. 250 °C</td>
<td>Net Weight 7 ounces</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 4CX600B/F

The 4CX600B/F is a ceramic and metal air-cooled radial-beam tetrode designed for use in wideband amplifiers, particularly, those intended for Class AB linear RF power amplifier service. 

**PLATE DISSIPATION**
- 600 watts

**FREQUENCY FOR MAXIMUM RATINGS**
- 800 MHz

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Dissipation (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB Broadband Linear Amplifier</td>
<td>4CX600B/F</td>
<td>3000</td>
<td>0.660</td>
<td>600</td>
</tr>
<tr>
<td>Max. Height 2.5 inches</td>
<td>3.0</td>
<td>Max. Diameter 3.0 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Anode Core Temp. 250 °C</td>
<td>Net Weight 7.7 ounces</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*In grid driven circuit at 470 MHz

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Dissipation (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Special, breechblock</td>
<td>4CX600B/F</td>
<td>2200</td>
<td>0.375</td>
<td>350</td>
</tr>
<tr>
<td>Max. Height 2.260 inches</td>
<td>165</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Diameter 2.08 inches</td>
<td>250 °C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Anode Core Temp. 250 °C</td>
<td>Net Weight 8 ounces</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 4CX600J

A highly linear beam tetrode for amplifier service. Low input capacitance and high voltage gain provide an ideal amplifier for use with a solid state driver. Its third and fifth order IMD products are below 31 dB or better when operated as below.

**PLATE DISSIPATION**
- 600 watts (max.)

**COOLING**
- Forced Air

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Dissipation (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB1, Radio-Frequency Linear Amplifier</td>
<td>4CX600J</td>
<td>3000</td>
<td>0.660</td>
<td>600</td>
</tr>
<tr>
<td>Max. Height 2.5 inches</td>
<td>1.0</td>
<td>Max. Diameter 3.0 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Anode Core Temp. 250 °C</td>
<td>Net Weight 8 ounces</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Use a bypassed cathode resistor of approximately 11 ohms.
**TETRODES**

### 8168/4CX1000A

This high-power ceramic-metal tetrode is an excellent choice for applications where class AB operation is desired. It is capable of delivering more than 1500 watts of plate dissipation power per tube in a service without requiring grid driving power. It is recommended for use in new equipments.

**PLATE DISSIPATION**

1000 watts

**COOLING**

FREQUENCY FOR MAXIMUM RATINGS

110 MHz

**CHARACTERISTICS**

- Cathode: Oxide-coated, unipotential
- Heater: 6.0 volts
- Current: 8.1 to 9.9 amperes
- Capacitances (Grounded Cathode): Input: 77 to 86 pf; Output: 11 to 11 pf
- Feed-Through: 0.01 pf
- Base: Special, breatherblock
- Socket: GS-800 series
- Max. Seal Temp.: 250 °C
- Max. Anode Core Temp.: 250 °C
- Max. Height: 4.8 inches
- Max. Diameter: 3.26 inches
- Net Weight: 17 ounces

**Maximum Ratings**

- Screen: Plate Voltage: 1500 volts
- Screen Current: 8.1 to 9.9 amperes
- Grid: Plate Voltage: 300 volts
- Grid Current: 0.9 amperes

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Power (watts)</th>
<th>Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB, RF Linear Amplifier</td>
<td>Power Amplifier</td>
<td>3000</td>
<td>325</td>
<td>0.885</td>
<td>0.885</td>
</tr>
<tr>
<td>AB, RF Amplifier and Modulator</td>
<td>Power Amplifier</td>
<td>1500</td>
<td>6.0</td>
<td>24.00</td>
<td></td>
</tr>
</tbody>
</table>

*Two tubes.

### 8352/4CX1000K

This high-power ceramic-metal tetrode is electrically identical to the 4CX1000A, but gives improved performance at UHF due to its solid- ing stem terminals. This terminal surface is internally insulated between input and output circuits to a marked degree and internalizes UHF operations as a class AB amplifier.

**PLATE DISSIPATION**

1000 watts

**COOLING**

FREQUENCY FOR MAXIMUM RATINGS

110 MHz

**CHARACTERISTICS**

- Cathode: Oxide-coated, unipotential
- Voltage: 6.0 volts
- Current: 8.1 to 9.9 amperes
- Capacitances (Grounded Cathode): Input: 84 pf; Output: 17 pf; Feed-Through: 0.02 pf
- Base: Special, ring and baffle
- Socket: SK-800 series
- Max. Seal Temp.: 250 °C
- Max. Anode Core Temp.: 250 °C
- Max. Height: 4.75 inches
- Max. Diameter: 3.26 inches
- Net Weight: 27 ounces

**Maximum Ratings**

- Screen: Plate Voltage: 1500 volts
- Screen Current: 8.1 to 9.9 amperes
- Grid: Plate Voltage: 300 volts
- Grid Current: 0.9 amperes

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Power (watts)</th>
<th>Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB, RF Linear Amplifier</td>
<td>Power Amplifier</td>
<td>3000</td>
<td>325</td>
<td>0.885</td>
<td>0.885</td>
</tr>
<tr>
<td>AB, RF Amplifier and Modulator</td>
<td>Power Amplifier</td>
<td>1500</td>
<td>6.0</td>
<td>24.00</td>
<td></td>
</tr>
</tbody>
</table>

*Two tubes.

### 4CX1500A

The 4CX1500A is a compact, high power ceramic and metal tetrode. It incorporates rugged internal construction features. A feature of this tube is the sturdy mesh cathode which allows it to meet demanding vibration and shock requirements. The 4CX1500K is useful up to 110 MHz and is recommended for use as a RF linear amplifier, a Class AB audio amplifier, a Class C power amplifier, plate-modulated oscillator, or a pulse modulator.

**PLATE DISSIPATION**

1500 watts

**COOLING**

FREQUENCY FOR MAXIMUM RATINGS

110 MHz

**CHARACTERISTICS**

- Filament: Therister type
- Voltage: 5.0 volts
- Current: 3.0 to 4.2 amperes
- Capacitances (Grounded Filaments): Input: 25.0 to 26.0 pf; Output: 10.5 to 14.5 pf; Feed-Through: 0.38 pf (max)
- Base: Breakout
- Socket: SK-821
- Max. Seal Temp.: 250 °C
- Max. Anode Core Temp.: 250 °C
- Max. Height: 4.815 inches
- Max. Diameter: 3.370 inches

**Maximum Ratings**

- Screen: Plate Voltage: 1500 volts
- Screen Current: 8.1 to 9.9 amperes
- Grid: Plate Voltage: 300 volts
- Grid Current: 0.9 amperes

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Power (watts)</th>
<th>Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Telephony</td>
<td>Power Amplifier</td>
<td>5000</td>
<td>1000</td>
<td>250</td>
<td>2500</td>
</tr>
<tr>
<td>C Telegraphy</td>
<td>Power Amplifier</td>
<td>5000</td>
<td>1000</td>
<td>250</td>
<td>2500</td>
</tr>
</tbody>
</table>

*Two tubes.

### 8660/4CX1500B

The 4CX1500B is a ceramic-metal, forced-air cooled, radial-beam tetrode with a rated plate dissipation of 1500 watts. It is a low distortion device specifically designed for exceptionally high current tube zones. For low current distortion applications and for applications where distortion characteristics are important, this tube is especially suitable for RF and AF linear amplifier service.

**PLATE DISSIPATION**

1500 watts

**COOLING**

FREQUENCY FOR MAXIMUM RATINGS

110 MHz

**CHARACTERISTICS**

- Cathode: Oxide-coated, unipotential
- Heater: Voltage: 6.0 volts
- Current: 12 amperes
- Capacitances (Grounded Cathode): Input: 80 pf (max); Output: 12.0 pf (max); Feed-Through: 0.5 pf (max)
- Base: Special
- Socket: S9-800 series
- Max. Seal Temp.: 250 °C
- Max. Anode Core Temp.: 250 °C
- Max. Height: 4.8 inches
- Max. Diameter: 3.37 inches
- Net Weight: 27 ounces

**Maximum Ratings**

- Screen: Plate Voltage: 1500 volts
- Screen Current: 8.1 to 9.9 amperes
- Grid: Plate Voltage: 300 volts
- Grid Current: 0.9 amperes

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Power (watts)</th>
<th>Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB, RF Linear Amplifier</td>
<td>Power Amplifier</td>
<td>3000</td>
<td>325</td>
<td>1.69*</td>
<td>1.69*</td>
</tr>
<tr>
<td>AB, RF Amplifier and Modulator</td>
<td>Power Amplifier</td>
<td>1500</td>
<td>6.0</td>
<td>24.00</td>
<td></td>
</tr>
</tbody>
</table>

*Two tubes.
TETRODES
EXTERNAL ANODE ■ FORCED-AIR COOLED

8169 / 4CX3000A
The 4CX3000A is a new ceramic-metal tube designed especially for class AB or linear amplifiers. It has a high degree of alignment and is self-centered. The 4CX3000A is the first choice for use in a class-C amplifier. The 4CX3000A is designed to operate at temperatures of 250 °C or less.

PLATE DISSIPATION
COOLED

CHARACTERISTICS
- Filament: Thinned tungsten wire
- Voltage: 6.0 volts
- Current: 30.5 amperes
- Capacitance: 1.4 pf (max)
- Feed-Through: 1.4 pf (max)
- Net Weight: 9.5 pounds

Typical Operation
- Voltage: 1250 volts
- Current: 1.5 amperes
- Power: 3.0 watts

8170 / 4CX5000A
This high-power ceramic and metal tube features high-class A-B operation at high output power. For use where high efficiency, high power output, and high reliability are desired. The 4CX5000A is the first choice for use in modern, new equipment design.

PLATE DISSIPATION
COOLED

CHARACTERISTICS
- Filament: Thinned tungsten wire
- Voltage: 6.0 volts
- Current: 30.5 amperes
- Capacitance: 1.4 pf (max)
- Feed-Through: 1.4 pf (max)
- Net Weight: 9.5 pounds

Typical Operation
- Voltage: 1250 volts
- Current: 1.5 amperes
- Power: 3.0 watts

4CX5000J
The 4CX5000J is recommended for use in linear amplifiers where high level of intermodulation distortion are desired, and where the mechanical environment includes shock and vibration as in transportable equipment.

PLATE DISSIPATION
COOLED

CHARACTERISTICS
- Filament: Thinned tungsten wire
- Voltage: 6.0 volts
- Current: 30.5 amperes
- Capacitance: 1.4 pf (max)
- Feed-Through: 1.4 pf (max)
- Net Weight: 9.5 pounds

Typical Operation
- Voltage: 1250 volts
- Current: 1.5 amperes
- Power: 3.0 watts

8170W / 4CX5000R
A rugged version of the 4CX5000A power triode, the 4CX5000R incorporates a sturdy mesh cathode construction. The 4CX5000R is the first choice for use in class-C amplifiers. The 4CX5000R is designed to operate at temperatures of 250 °C or less.

PLATE DISSIPATION
COOLED

CHARACTERISTICS
- Filament: Thinned tungsten wire
- Voltage: 6.0 volts
- Current: 30.5 amperes
- Capacitance: 1.4 pf (max)
- Feed-Through: 1.4 pf (max)
- Net Weight: 9.5 pounds

Typical Operation
- Voltage: 1250 volts
- Current: 1.5 amperes
- Power: 3.0 watts
TETRODES
EXTERNAL ANODE FORCED-AIR COOLED

8171/4CX10,000D
This Einame tetrode is electrically identical to the 4CX5500A except for its plate dissipation rating and is intended for use where the extra plate dissipation is a necessity. It may be used at maximum ratings through 35 MHz and at slightly reduced ratings through the FM broadcast band.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATINGS
COOLING
30 Ml
10,000 watts

CHARACTERISTICS
Filament: Thoriated lanthanum 7.5 volts
Current: 72 to 75 amperes
Concentric (Grounded Filament): Input 115 pt
Output 71 pt
Feed-through 1.9 pt
Base: Special, concentric Socket: Einame SK-20A
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 260 °C
Max. Height 9.13 inches
Max. Diameter 7.80 inches
Net Weight 17.8 pounds

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage</td>
<td>Plate Current</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
</tr>
<tr>
<td>AB: Audio-Frequency Power Amplifier and Modulator</td>
<td></td>
<td>7500 4.00</td>
<td>12,000 230</td>
</tr>
<tr>
<td>AB: Radio-Frequency Linear Power Amplifier</td>
<td></td>
<td>7500 4.00</td>
<td>12,000 230</td>
</tr>
<tr>
<td>C: Plate-Modulated rf Power Amplifier</td>
<td></td>
<td>5000 2.5</td>
<td>6500 250</td>
</tr>
<tr>
<td>C: Radio-Frequency Power Amplifier and Modulator</td>
<td></td>
<td>7500 2.0</td>
<td>10,000 230</td>
</tr>
</tbody>
</table>

*Two tubes.

828/1/4CX15,000A
A notable addition to the Einame line of ceramic-metal power tetrades, the 4CX15,000A is similar in the 4CX10,000D but features higher plate voltage and current and greater plate dissipation. These increased capabilities allow it to operate at full ratings through the FM broadcast band. The 4CX15,000A is recommended for use in new equipment design.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATINGS
COOLING
15,000 watts

CHARACTERISTICS
Filament: Thoriated lanthanum Voltage 6.1 volts
Current: 192 to 194 amperes
Capacitance (Grounded Filament): Input 16.8 to 16.9 pt
Output 20.0 to 20.8 pt
Feed-Through 2.0 pt
Base: Special, concentric Socket: Einame SK-300A
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 285 °C
Max. Height 9.44 inches
Max. Diameter 7.80 inches
Net Weight 17.8 pounds

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage</td>
<td>Plate Current</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
</tr>
<tr>
<td>C: Radio-Frequency Power Amplifier and Oscillator</td>
<td></td>
<td>10,000 6.0</td>
<td>10,000 450</td>
</tr>
<tr>
<td>C: Plate-Modulated rf Power Amplifier</td>
<td></td>
<td>8,000 4.0</td>
<td>10,000 450</td>
</tr>
<tr>
<td>AB: Audio-Frequency Power Amplifier and Oscillator</td>
<td></td>
<td>10,000 6.0</td>
<td>10,000 450</td>
</tr>
</tbody>
</table>

*Two tubes.

4CX15,000J
The 4CX15,000J is recommended for use in linear amplifier service where the levels of intermodulation distortion are required, and where the mechanical environment includes shock and vibration as in transportable equipment.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATINGS
COOLING
15,000 watts

CHARACTERISTICS
Filament: Thoriated lanthanum mesh Voltage 6.1 volts
Current: 153 amperes
Capacitance (Grounded Filament): Input 16.8 to 16.9 pt
Output 20.0 to 20.8 pt
Feed-Through 2.0 pt
Base: Special Concentric Socket: Einame SK-300 or DK-200A
Max. Envelope Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 9.375 inches
Max. Diameter 7.80 inches
Net Weight 12.8 pounds

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage</td>
<td>Plate Current</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
</tr>
<tr>
<td>AB: Linear Power Amplifier and Oscillator</td>
<td></td>
<td>10,000 6.0</td>
<td>10,000 450</td>
</tr>
</tbody>
</table>

*Two tubes.

8349/4CX35,000C
Einame's largest, forced-air cooled power tetrode has a plate dissipation rating at 35 kilowatts and is capable of 20,000 plate volts in Class C and Class AB amplifier service. A single 4CX35,000C will deliver over 100 milliwatts of CW power as a Class C power amplifier or oscillator.

PLATE DISSIPATION
FREQUENCY FOR MAXIMUM RATINGS
COOLING
35,000 watts

CHARACTERISTICS
Filament: Thoriated lanthanum Voltage 10.0 volts
Current 300 amperes
Capacitance (Grounded Filament): Input 465 pt
Output 51.7 pt
Feed-Through 2.45 pt
Base: Special, concentric Socket: Einame SK-1000
Max. Seal Temp. 350 °C
Max. Anode Core Temp. 350 °C
Max. Height 17.0 inches
Max. Diameter 9.20 inches
Net Weight 60 pounds

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
<th>Typical Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plate Voltage</td>
<td>Plate Current</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(volts)</td>
<td>(amps)</td>
</tr>
<tr>
<td>AB: Audio-Frequency Power Amplifier and Modulator</td>
<td></td>
<td>20,000 15.0</td>
<td>35,000 1750</td>
</tr>
<tr>
<td>AB: Radio-Frequency Linear Power Amplifier - SSB</td>
<td></td>
<td>20,000 15.0</td>
<td>35,000 1750</td>
</tr>
<tr>
<td>C: Plate-Modulated rf Power Amplifier</td>
<td></td>
<td>20,000 15.0</td>
<td>35,000 1750</td>
</tr>
<tr>
<td>C: Plate-Modulated rf Power Amplifier and Oscillator</td>
<td></td>
<td>16,000 15.0</td>
<td>22,000 1750</td>
</tr>
</tbody>
</table>

*Two tubes.
TETRODES

EXTERNAL ANODE  II  FORCED-AIR COOLED

4X500A
This medium-power external anode tetrode fills the acceptance in FM broadcast service. It has the features of the 4X500A and 4X500F and is designed for use in broadcast or modulation service.

PLATE DISSIPATION
500 watts

FREQUENCY FOR MAXIMUM RATINGS
170 MHz — class-C CW
220 MHz — class-B TV

CHARACTERISTICS
- Filament: 8.5 volts, 1.9 amperes
- Base: Special, straight through, 0.02 pf
- Voltage: 2500 volts
- Current: 1.25 amperes
- Input: 46 pf (max)
- Output: 18 to 21 pf
- Feed-Through: 0.02 pf

EXTERNAL, ANODE  II  WATER COOLED

4CW800B and 4CW800F
The 4CW800B and 4CW800F are medium-power, dual-tungsten-brain tetrodes, designed for use in broadcast service. They offer a wide range of performance characteristics, making them suitable for various applications.

PLATE DISSIPATION
800 watts

FREQUENCY FOR MAXIMUM RATINGS
800 MHz

CHARACTERISTICS
- Cathode: Oxide-coated, unipotential
- Voltage: 1200 volts
- Current: 1.25 amperes
- Input: 6.0 volts
- Output: 6.0 volts
- Feed-Through: 6.0 volts

8244/4CW2000A
This recent addition to the series is electrically identical to the popular 4CX1000A except for its plate dissipation rating which is 2000 watts. It is intended for use where water cooling is preferred or where higher anode-dissipation capability is required.

PLATE DISSIPATION
2000 watts

FREQUENCY FOR MAXIMUM RATINGS
110 MHz

CHARACTERISTICS
- Cathode: Oxide-coated, unipotential
- Voltage: 1200 volts
- Current: 1.25 amperes
- Input: 6.0 volts
- Output: 6.0 volts
- Feed-Through: 6.0 volts

4CW10,000A
Electrically identical to the 4CX5000A except for its plate dissipation rating. The 4CW10,000A is intended for use where water cooling is preferred or where the extra plate dissipation is a necessity. It may be used at maximum ratings through 30 MHz and at slightly reduced ratings through the FM broadcast band.

PLATE DISSIPATION
12,000 watts

FREQUENCY FOR MAXIMUM RATINGS
30 MHz

CHARACTERISTICS
- Filament: Thyratron tungsten, 75 to 78 amperes
- Base: Special, straight through, 0.02 pf
- Voltage: 14,000 volts
- Current: 1.25 amperes
- Input: 100 to 120 volts
- Output: 18 to 21 volts
- Feed-Through: 1.0 pf
**TETRODES**

### 4CW25,000A

The 4CW25,000A is a liquid-cooled, general purpose tetrode with the same basic characteristics as the air-cooled 4CWS,000A. It is recommended for regulator, and pulse modulator service.

**PLATE DISSIPATION**
- 25,000 watts

**COOLING**
- Water and Forced Air

**CHARACTERISTICS**
- Filament: Thoriated tungsten
- Voltage: 250 volts
- Current: 150 amperes
- Capacitance (Grounded Filament): Base 150 pF, Gate 150 pF, Grid 250 pF
- Max. Temperature: 125 °C
- Max. Diameter: 4.6 inches
- Net Weight: 13.5 pounds

*Shown with SK-2100 water jacket.

### 4CW50,000E*

The 4CW50,000E is a ceramic-metal, liquid-cooled power tetrode intended for use at the 50 to 100 kW output power level. It is recommended for use as a Class C RF amplifier, or oscillator, a Class AB RF linear amplifier, or a Class AB push-pull RF amplifier. It is also useful as a plate and screen modulated Class C RF amplifier.

**PLATE DISSIPATION**
- 50,000 watts

**COOLING**
- Liquid

**CHARACTERISTICS**
- Filament: Thoriated tungsten
- Voltage: 120 volts
- Current: 220 amperes
- Capacitance (Grounded Filament): Input 340 pF, Output 55 pF
- Feed-Through: 0.7 ft

*Shown with SK-2050 water jacket.

### 4CW100,000D

The 4CW100,000D is a ceramic-metal, liquid-cooled power tetrode intended for use at the 100 to 200 kW output power level. It is recommended for use as a Class C RF amplifier, or oscillator, a Class AB RF linear amplifier, or a Class AB push-pull RF amplifier. The 4CW100,000D is also useful as a plate and screen modulated Class C RF amplifier and in pulse modulator-regulator service.

**PLATE DISSIPATION**
- 100,000 watts

**COOLING**
- Liquid

**CHARACTERISTICS**
- Filament: Thoriated tungsten
- Voltage: 110 volts
- Current: 200 amperes (max)
- Capacitance (Grounded Filament): Input 500 pF, Output 500 pF
- Feed-Through: 3.2 ft

### 4CW100,000E*

The 4CW100,000E is a ceramic-metal, liquid-cooled power tetrode intended for use at the 100 to 200 kW output power level. It is recommended for use as a Class C RF amplifier, or oscillator, a Class AB RF linear amplifier, or a Class AB push-pull RF amplifier. The 4CW100,000E is also useful in pulse modulator-regulator service.

**PLATE DISSIPATION**
- 100,000 watts

**COOLING**
- Liquid and Forced Air

**CHARACTERISTICS**
- Filament: Thoriated tungsten
- Voltage: 160 volts
- Current: 200 amperes (max)
- Capacitance (Grounded Filament): Input 400 pF, Output 50 pF
- Feed-Through: 0.8 ft

*Shown with SK-2100 water jacket.

---

### Table

<table>
<thead>
<tr>
<th><strong>Class of Operation</strong></th>
<th><strong>Type of Service</strong></th>
<th><strong>Maximum Ratings</strong></th>
<th><strong>Typical Operation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plate Voltage</strong> (volts)</td>
<td><strong>Plate Current</strong> (amps)</td>
<td><strong>Plate Screen Grid Diss. (watts)</strong></td>
<td><strong>Drive Output Power</strong> (watts)</td>
</tr>
<tr>
<td><strong>Plate Voltage</strong> (volts)</td>
<td><strong>Plate Current</strong> (amps)</td>
<td><strong>Plate Screen Grid Diss. (watts)</strong></td>
<td><strong>Drive Output Power</strong> (watts)</td>
</tr>
<tr>
<td><strong>Screen Voltage</strong> (volts)</td>
<td><strong>Screen Current</strong> (amps)</td>
<td><strong>Screen Power</strong> (watts)</td>
<td><strong>Drive Output Power</strong> (watts)</td>
</tr>
<tr>
<td><strong>Drive Voltage</strong> (volts)</td>
<td><strong>Drive Current</strong> (amps)</td>
<td><strong>Drive Power</strong> (watts)</td>
<td><strong>Output Power</strong> (watts)</td>
</tr>
</tbody>
</table>

*Typical operation in distributed amplifier service. **RF power into load per tube.*

---

### Notes

*Two tubes.*
**Tetrodes**

**EXTERNAL ANODE • WATER COOLED**

**4CW250,000A and 4CW250,000V**

The 4CW250,000A and 4CW250,000V are identical ceramic-metal, water-cooled power tetrodes except that the 4CW250,000V contains an integral ion vacuum pump which may be used to check the tube's vacuum condition during storage or to restore the vacuum of a tube which has been damaged by overheating in service. The tubes are intended for use in the 250 to 500 kW output power range.

**PLATE DISSIPATION**

250,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**

50 MHz

**COOLING**

Liquid

**CHARACTERISTICS**

- **Filament**: Thoriated tungsten
- **Voltage**: 12.0 volts
- **Current**: 560 amperes
- **Capacitances (Grounded Grid)**: 16.6 pf (max)
- **Input**: 775 pf
- **Output**: 120 pf
- **Feed-Through**: 6.0 pf

*Shown with SK-1720 water jacket.

**8249/4W300B**

A general purpose radio-tube tetrode with electrical characteristics similar to those of the Eimac 4X250B, this water-cooled version is intended for use where reserve anode dissipation is desired or where the use of water is a convenience. Maximum ratings apply to frequencies as high as 500 MHz.

**PLATE DISSIPATION**

750 watts

**FREQUENCY FOR MAXIMUM RATINGS**

500 MHz

**COOLING**

Water and Forced Air

**CHARACTERISTICS**

- **Cathode**: Oxide-coated, unipotential
- **Filament**: Thoriated tungsten
- **Grid**: Special or Modulator
- **Vacuum Condition**: During storage or to restore the vacuum operation service
- **Type**: Power Amplifier or Oscillator

**8173/4W20,000A**

The 8173/4W20,000A is a high-power, water-cooled, power tetrode intended for use in the 250 to 500 kW output power range. This water-cooled version is similar to those of the Eimac 4X250B, but it is intended for use where reserve anode dissipation is desired or where the use of water is a convenience. Maximum ratings apply to frequencies as high as 500 MHz.

**PLATE DISSIPATION**

20,000 watts

**FREQUENCY FOR MAXIMUM RATINGS**

220 MHz

**COOLING**

Water and Forced Air

**CHARACTERISTICS**

- **Cathode**: Oxide-coated, unipotential
- **Heater**: 60.0 volts
- **Voltage**: 12.6 volts
- **Current**: 14.3 amperes
- **Capacitances (Grounded Cathode)**: 87.5 pf (max)
- **Input**: 88 pf
- **Output**: 12.8 pf
- **Feed-Through**: 0.03 pf

*Corresponds to 250,000 watts at 100 per cent sine wave modulation.

**EXTERNAL ANODE • VAPOR COOLED**

**4CV1500B**

The 4CV1500B is a ceramic-metal, vapor and forced air cooled radial beam tetrode with a rated maximum plate dissipation of 1500 watts. It is a low-voltage, high-current tube specifically designed for exceptionally low intermodulation distortion and low grid intercoupling. The low distortion characteristics make the 4CV1500B especially suitable for RF and FM linear amplifier service.

**PLATE DISSIPATION**

1500 watts

**FREQUENCY FOR MAXIMUM RATINGS**

200 MHz

**COOLING**

Vapor and Forced Air

**CHARACTERISTICS**

- **Cathode**: Oxide-coated, unipotential
- **Grid**: Special or Modulator
- **Vacuum Condition**: During storage or to restore the vacuum operation service
- **Type**: Power Amplifier or Oscillator

---

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>0.250</td>
<td>500</td>
</tr>
<tr>
<td>3000</td>
<td>0.900</td>
<td>2700</td>
</tr>
<tr>
<td>4000</td>
<td>1.500</td>
<td>5400</td>
</tr>
<tr>
<td>5000</td>
<td>2.000</td>
<td>10,000</td>
</tr>
<tr>
<td>6000</td>
<td>2.500</td>
<td>15,000</td>
</tr>
</tbody>
</table>

*Corresponds to 250,000 watts at 100 per cent sine wave modulation.
### 4CV8000A

This vapor-cooled version of Eimac's 4CX8000A offers a conservative plate dissipation rating of 8000 watts. It is recommended for Class A/B audio and radio frequency applications as well as Class C of amplifier operation. A pair of these tubes will deliver over 16 kilowatts of audio frequency output with low distortion in Class A/B service.

**PLATE DISSIPATION**

- **Maximum Ratings:** 8000 watts
- **Frequency for Maximum Ratings:** 6000 watts
- **Cooling:** Vapor and Forced Air

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten
- **Voltage:** 6.3 volts
- **Current:** 157 to 168 amperes
- **Capacitance:** Grounded Filament: Input: 140 to 172 pf
- **Output:** 220 to 250 pf
- **Feed-Through:** 2.0 pf
- **Net Weight:** 24 pounds
- **Socket:** Eimac SK-352
- **Max. Seal Temp.:** 225°C
- **Max. Height:** 1.125 inches
- **Max. Diameter:** 1.75 inches

**Class and Type of Operation**

- **Typical Operation:**
  - **Plate:** 15.000, **Screen:** 7500, **Grid:** 5000, **Drive:** 10,000, **Output Power:** 36,000 watts

**Vapor and Forced Air**

### 4CV20.000A

A vapor-cooled version of the popular 4CX20.000A, the 4CV20.000A has a plate dissipation rating of 20 kilowatts. Two of these tubes in a push-pull, Class A/B, amplifier will produce 30 kilowatts output. This combination of vapor cooling accessories is available for this and all other Eimac vapor-cooled tube types.

**PLATE DISSIPATION**

- **Maximum Ratings:** 20,000 watts
- **Frequency for Maximum Ratings:** 20 Mhz
- **Cooling:** Vapor and Forced Air

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten
- **Voltage:** 7.5 volts
- **Current:** 72 to 78 amperes
- **Capacitance:** Grounded Filament: Input: 108 to 125 pf
- **Output:** 16.5 to 20.5 pf
- **Feed-Through:** 1.0 pf
- **Net Weight:** 21 pounds
- **Socket:** Eimac SK-310
- **Max. Height:** 9.125 inches
- **Max. Diameter:** 7.75 inches
- **Breechblock:** Special, concentric

**Class and Type of Operation**

- **Typical Operation:**
  - **Plate:** 17.500, **Screen:** 9,000, **Grid:** 7500, **Drive:** 14,500, **Output Power:** 23,500 watts

**Vapor and Forced Air**

### 4CV35.000A

Recommended for use as a modulator, oscillator or amplifier, the 4CV35.000A is usable to 110 megacycles. With a plate voltage of 50 kv in Class C service, the tube is capable of over 35 kilowatts output. The plate dissipation of 35 kilowatts allows use of the 4CV35.000A in Class-C service, the tube is capable of over 35 kilowatts output. It is recommended for Class-AB RF linear amplifiers for use at the 50 to 100 kW output power level. It is recommended for use as a Class A/B RF amplifier or modulator, a Class AB RF linear amplifier or as a Class AB push pull AF amplifier or modulator. The 4CV35.000A can also be used as a plate and screen modulated Class C RF amplifier.

**PLATE DISSIPATION**

- **Maximum Ratings:** 35,000 watts
- **Frequency for Maximum Ratings:** 110 Mhz
- **Cooling:** Vapor and Forced Air

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten
- **Voltage:** 8.1 volts
- **Current:** 157 to 168 amperes
- **Capacitance:** Grounded Filament: Input: 140 to 172 pf
- **Output:** 220 to 250 pf
- **Feed-Through:** 2.0 pf
- **Net Weight:** 24 pounds
- **Socket:** Eimac SK-352
- **Max. Seal Temp.:** 225°C
- **Max. Height:** 1.125 inches
- **Max. Diameter:** 1.75 inches

**Class and Type of Operation**

- **Typical Operation:**
  - **Plate:** 15.000, **Screen:** 7500, **Grid:** 5000, **Drive:** 10,000, **Output Power:** 36,000 watts

**Vapor and Forced Air**

### 4CV50.000E *

The 4CV50.000E is a ceramic-metal, vapor-cooled tetrode intended for use at the 50 to 100 kW output power level. It is recommended for use as a Class C RF amplifier or modulator, a Class AB RF linear amplifier or as a Class AB push pull AF amplifier or modulator. The 4CV50.000E can also be used as a plate and screen modulated Class C RF amplifier.

**PLATE DISSIPATION**

- **Maximum Ratings:** 50,000 watts
- **Frequency for Maximum Ratings:** 50,000 watts
- **Cooling:** Vapor and Forced Air

**CHARACTERISTICS**

- **Filament:** Thoriated tungsten mesh
- **Voltage:** 6.3 volts
- **Current:** 220 amperes
- **Capacitance:** Input: 360 pf
- **Output:** 7.5 pf
- **Feed-Through:** 0.7 pf
- **Net Weight:** 35 pounds
- **Socket:** SK-2000 Series Breechblock: BR-700
- **Max. Seal Temp.:** 250°C
- **Max. Anode Flange Temp.:** 200°C
- **Max. Height:** 13.6 inches
- **Max. Diameter:** 7.75 inches

**Class and Type of Operation**

- **Typical Operation:**
  - **Plate:** 17.500, **Screen:** 9,000, **Grid:** 7500, **Drive:** 14,500, **Output Power:** 23,500 watts

**Vapor and Forced Air**

---

*Shown with BR-700 breechblock.*
COOLING Vapor and Water

The 4CV75,000A is a vapor phase cooled tetrode with basic characteristics the same as the 4CV100,000C. It is intended for use with the compact, upright, boiler, Eimac BR-320. This combination results in low capacitance of anode and boiler to ground.

PLATE DISSIPATION
75,000 watts

FREQUENCY FOR MAXIMUM RATINGS
30 MHz

CHARACTERISTICS
Filament: Thoriated tungsten Voltage 15.5 volts Current 500 amperes Capacitances (Grounded Filament): Input 47 pf Output 55 pf Feed-Through 2.5 pf

Base Special coaxial rings Socket Eimac SK-1500

Internal. Anode Flange Ma* Seal Temp. 250 °C

4CV75,000A *

* Shown with BR-320 boiler.

8351/4CV100,000C

The largest of Eimac's power grid tubes, the 4CV100,000C is finding widespread acceptance in application where a very high power rugged tetrode is desired. Vapor cooling allows a conservative plate dissipation rating of 100,000 watts.

PLATE DISSIPATION
100,000 watts

FREQUENCY FOR MAXIMUM RATINGS
30 MHz

COOLING Vapor and Forced Air

CHARACTERISTICS
Filament: Thoriated tungsten Voltage 15.5 volts Current 300 amperes Capacitances (Grounded Filament): Input 470 pf Output 470 pf Feed-Through 2.3 pf

Base Special coaxial rings Socket Eimac SK-1500 Series

Internal. Anode Flange Ma* Seal Temp. 250 °C

4CV100,000C

* Shown with BR-320 boiler.

4CV100,000E *

The 4CV100,000E is a ceramic-metal, vapor-cooled power tetrode intended for use at the 100 to 250 kW CW, and 150 to 500 kW pulse output power level. Its low grid-to-plate capacitance and high transconductance make the tube ideal for broadband grid drive operation. The 4CV100,000E is also useful in pulse modulator and regulator service.

PLATE DISSIPATION
100,000 watts

COOLING Vapor and Forced Air

CHARACTERISTICS
Filament: Thoriated tungsten Voltage 15.5 volts Current 230 amperes Capacitances (Grounded Filament): Input 1900 pf Output 1900 pf Feed-Through 0.9 pf

Base Special coaxial rings Socket Eimac SK-1500 Series

Internal. Anode Flange Ma* Seal Temp. 250 °C

4CV100,000E *

4CV250,000A and 4CV250,000V

The 4CV250,000A and V are ceramic-metal, vapor-cooled power tetrodes. The tubes are recommended for use as a Class C RF amplifier or oscillator, a Class AB RF linear amplifier or Class AB push-pull AF amplifier or modulator.

PLATE DISSIPATION
250,000 watts

FREQUENCY FOR MAXIMUM RATINGS
30 MHz

COOLING Vapor and Water

CHARACTERISTICS
Filament: Thoriated tungsten Voltage 15.5 volts Current 300 amperes Capacitances (Grounded Filament): Input 2000 pf Output 2000 pf Feed-Through 8.0 pf

Base Special coaxial rings Socket BR-600 Boiler

Internal. Anode Flange Ma* Seal Temp. 250 °C

4CV250,000A and 4CV250,000V

4CV250,000A is supplied with a Various pump.
**PENTODES**

**4E27A/5-125B**

A general-purpose compact pentode cooled by radiation and convection and with maximum ratings applicable to 75 MHz. No forced-air cooling is required in most installations.

### PLATE DISSIPATION

- **125 watts**

### FREQUENCY FOR MAXIMUM RATINGS

- **75 MHz**

### CHARACTERISTICS

- **Pentode**
- **radial cathode**
- **125 MHz**
- **4000 volts**
- **5000 volts**
- **6000 volts**

### COOLING

- **Radiation and Forced Air**

### 175A

The 175A is a beam pentode which incorporates a unique vane-type suppressor grid. The suppressor grid terminates in the base shell and is designed to operate at zero voltages. The base shell must be grounded to the chassis by means of suitable spring clips.

### PLATE DISSIPATION

- **400 watts**

### COOLING

- **Forced Air**

### CHARACTERISTICS

- **Filament:** Thoriated tungsten
- **Voltage:** 5.0 volts
- **Current:** 1.45 amperes
- **Capacitances:** Input 3.7 pf, Output 0.98 pf, Feed-Through 0.06 pf
- **Base:** 7-pin metal shell
- **Max. Height:** 6.01 inches
- **Max. Diameter:** 3.56 inches

### 177WA

The 177WA beam pentode is a ruggedized version of the 177A with which it is directly interchangeable. The 177WA may be mounted in any position and will withstand high levels of shock and vibration. The tube incorporates a unique style suppressor grid which permits high power output at relatively low plate and screen voltages.

### PLATE DISSIPATION

- **75 watts**

### COOLING

- **Forced Air**

### CHARACTERISTICS

- **Filament:** Thoriated tungsten
- **Voltage:** 6.0 volts
- **Current:** 3.2 amperes
- **Capacitances:** Input 7.5 pf, Output 4.25 pf, Feed-Through 0.09 pf
- **Base:** 7-pin metal shell
- **Max. Height:** 4.38 inches
- **Max. Diameter:** 2.38 inches

### 5-500A

The 5-500A is a compact, ruggedly constructed radial beam power pentode with a maximum plate dissipation rating of 500 watts. It is intended for use as an amplifier, oscillator, or modulator. The high plate current rating, low grid-plate capacitance and low driving power requirements permit maximum power capability to be combined with circuit simplicity and economic driver requirements.

### PLATE DISSIPATION

- **500 watts**

### COOLING

- **Radiation and Forced Air**

### CHARACTERISTICS

- **Filament:** Thoriated tungsten
- **Voltage:** 30.0 volts
- **Current:** 10.2 amperes
- **Capacitances:** Input 17.0 pf (max), Output 17.0 pf (max), Feed-Through 0.19 pf
- **Base:** 6-pin bakelite
- **Max. Height:** 2.00 inches
- **Max. Diameter:** 1.50 inches
- **Net Weight:** 12 ounces

### Table of Maximum Ratings and Typical Operation

<table>
<thead>
<tr>
<th>Class of Type of Operation Service</th>
<th>Plate Voltage Current Diss. (volts) (amps)</th>
<th>Screen Voltage Current Diss. (volts) (amps)</th>
<th>Grid Voltage Current Diss. (volts) (amps)</th>
<th>Drive Output Power (volts) (amps) (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C RF Amplifier or Oscillator</td>
<td>2000 0.150 75</td>
<td>1500 0.150 75</td>
<td>1500 0.150 75</td>
<td>1500 0.150 75</td>
</tr>
<tr>
<td>AB Linear RF Amplifier</td>
<td>2000 0.175 75</td>
<td>1500 0.175 75</td>
<td>1500 0.175 75</td>
<td>1500 0.175 75</td>
</tr>
</tbody>
</table>

*Two tubes*
**PENTODES**

### 8295/172

This tube is an air-cooled, glass and metal beam pentode capable of high power gain and excellent efficiency at relatively low plate voltages. The tube is especially suited for low-distortion Class AB, linear RF amplifier service.

**PLATE DISSIPATION**

- **COOLING**: Forced Air
- **Maximum**: 1000 watts

**CHARACTERISTICS**

- **Cathode**: Oxide-coated, unipotential Base
- **Heater Voltage**: 6.0 volts
- **Current**: 0.2 amperes
- **Maximum Plate Voltage**: 1500 volts
- **Maximum Plate Current**: 8.2 amperes
- **Maximum Plate Dissipation**: 1000 watts
- **Maximum Screen Voltage**: 40 volts
- **Maximum Screen Current**: 10.0 amperes
- **Net Weight**: 2.5 pounds
- **Height**: 4.75 inches
- **Max. Diameter**: 3.53 inches
- **Feed-Through**: 0.10 pf

### 8295A

The 8295A is an air-cooled, ceramic metal beam pentode capable of high power gain and excellent efficiency at relatively low plate voltages. The tube is especially suited for low-distortion Class AB, linear RF amplifier service.

**PLATE DISSIPATION**

- **COOLING**: Forced Air
- **Maximum**: 1000 watts

**CHARACTERISTICS**

- **Cathode**: Oxide-coated, unipotential Base
- **Heater Voltage**: 6.0 volts
- **Current**: 0.2 amperes
- **Maximum Plate Voltage**: 1500 volts
- **Maximum Plate Current**: 8.2 amperes
- **Maximum Plate Dissipation**: 1000 watts
- **Maximum Screen Voltage**: 40 volts
- **Maximum Screen Current**: 10.0 amperes
- **Net Weight**: 2.5 pounds
- **Height**: 4.75 inches
- **Max. Diameter**: 3.53 inches
- **Feed-Through**: 0.10 pf

### 8432

The 8432 is a ceramic-metal beam pentode featuring compact construction. The tube is especially suited for low-distortion Class AB, linear RF amplifier service where a single tube will deliver over 1500 watts of useful power output. The tube also provides outstanding performance in Class AB, and Class B service.

**PLATE DISSIPATION**

- **COOLING**: Forced Air
- **Maximum**: 1000 watts

**CHARACTERISTICS**

- **Cathode**: Oxide-coated, unipotential Base
- **Heater Voltage**: 6.0 volts
- **Current**: 0.2 amperes
- **Maximum Plate Voltage**: 1500 volts
- **Maximum Plate Current**: 8.2 amperes
- **Maximum Plate Dissipation**: 1000 watts
- **Maximum Screen Voltage**: 40 volts
- **Maximum Screen Current**: 10.0 amperes
- **Net Weight**: 2.5 pounds
- **Height**: 4.75 inches
- **Max. Diameter**: 3.53 inches
- **Feed-Through**: 0.10 pf

### 5CX1500A

The 5CX1500A is a ceramic-metal power pentode designed to be used as a Class AB linear amplifier in audio or radio-frequency applications. Its low intermodulation distortion characteristics make it especially suitable for single sideband service.

**PLATE DISSIPATION**

- **COOLING**: Forced Air
- **Maximum**: 1500 watts

**CHARACTERISTICS**

- **Filament**: Thoriated tungsten mesh
- **Voltage**: 5.0 volts
- **Current**: 5.0 amperes
- **Maximum Plate Voltage**: 1500 volts
- **Maximum Plate Current**: 8.2 amperes
- **Maximum Plate Power**: 1500 watts
- **Maximum Screen Voltage**: 40 volts
- **Maximum Screen Current**: 10.0 amperes
- **Net Weight**: 2.5 pounds
- **Height**: 4.75 inches
- **Max. Diameter**: 3.53 inches
- **Feed-Through**: 0.10 pf

---

**Maximum Ratings**

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Plate Voltage (volts)</th>
<th>Plate Current (amps)</th>
<th>Plate Dissipation (watts)</th>
<th>Screen Voltage (volts)</th>
<th>Screen Current (amps)</th>
<th>Screen Dissipation (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A RF Amplifier or Oscillator</td>
<td>2500</td>
<td>500</td>
<td>1250</td>
<td>500</td>
<td>0.840</td>
<td>2.1</td>
</tr>
<tr>
<td>Class B Linear Amplifier</td>
<td>2500</td>
<td>500</td>
<td>1260</td>
<td>500</td>
<td>0.880</td>
<td>2.1</td>
</tr>
</tbody>
</table>

**Typical Operation**

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Voltage (volts)</th>
<th>Current (amps)</th>
<th>Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C RF Amplifier or Oscillator</td>
<td>4000</td>
<td>1.0</td>
<td>1500</td>
</tr>
<tr>
<td>C Plate Modulated RF Power Amplifier</td>
<td>3000</td>
<td>0.1</td>
<td>1500</td>
</tr>
<tr>
<td>AB RF Amplifier or Modulator</td>
<td>4000</td>
<td>1.0</td>
<td>1500</td>
</tr>
<tr>
<td>AB RF Linear Amplifier</td>
<td>4000</td>
<td>1.0</td>
<td>1500</td>
</tr>
</tbody>
</table>

*Two tubes.*
## 5CX3000A

The 5CX3000A is a ceramic-metal power pentode designed for Class AB linear amplifier AF and RF applications. Its low input modulation distortion characteristics make it especially suitable for single-sided service.

### Characteristics
- **Filament**: Thodium filament
- **Heater**: 9.0 volts
- **Current**: 67.5 amperes (max)
- **Capacitances (Grounded Cathode)**: Input 145 pf, Output 24 pf, Feed through 0.05 pf
- **Maximum Ratings**:
  - Plate Dissipation: 3000 watts
  - Frequency: 150 MHz
  - Cooling: Forced Air

### Typical Operation

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plate Plate Screen Grid Drive Output</td>
<td>Voltage Current Diss. Diss. Diss. Power Power</td>
</tr>
<tr>
<td></td>
<td>Voltage Voltage Voltage Current (volts) (amps) (volt) (amps) (watts)</td>
<td></td>
</tr>
<tr>
<td>Class A</td>
<td>7000</td>
<td>3.0</td>
</tr>
<tr>
<td>Class AB</td>
<td>6800</td>
<td>500</td>
</tr>
<tr>
<td>Class C</td>
<td>6000</td>
<td>850</td>
</tr>
</tbody>
</table>

*Two tubes.*

## 8576/264

The 8576/264 is a ceramic-metal beam pentode with exceptionally low input capacitance for its power-handling capability. This tube is especially suited for use in broadband linear amplifiers, but will also provide outstanding performance in other Class AB amplifier applications.

### Characteristics
- **Cathode**: Oxide-coated, unipotential base
- **Heater**: 5.0 volts (max)
- **Current**: 12 amperes
- **Capacitances (Grounded Cathode)**: Input 87 pf, Output 33 pf, Feed through 0.16 pf
- **Maximum Ratings**:
  - Plate Dissipation: 3000 watts
  - Frequency: 250 MHz
  - Cooling: Forced Air

### Typical Operation

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plate Plate Screen Grid Drive Output</td>
<td>Voltage Current Diss. Diss. Diss. Power Power</td>
</tr>
<tr>
<td></td>
<td>Voltage Voltage Voltage Current (volts) (amps) (volt) (amps) (watts)</td>
<td></td>
</tr>
<tr>
<td>Class A</td>
<td>5000</td>
<td>2.0</td>
</tr>
<tr>
<td>Class AB</td>
<td>5000</td>
<td>750</td>
</tr>
</tbody>
</table>

## 290

The 290 is a ceramic-metal beam pentode with exceptionally low input capacitance for its power-handling capability. This tube is especially suited for use in broadband linear amplifiers, but will also provide outstanding performance in other Class AB amplifier applications.

### Characteristics
- **Cathode**: Oxide-coated, unipotential base
- **Heater**: 5.0 volts (max)
- **Current**: 12 amperes
- **Capacitances (Grounded Cathode)**: Input 87 pf, Output 33 pf, Feed through 0.16 pf
- **Maximum Ratings**:
  - Plate Dissipation: 5000 watts
  - Frequency: 250 MHz
  - Cooling: Forced Air

### Typical Operation

<table>
<thead>
<tr>
<th>Class of Operation</th>
<th>Type of Service</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plate Plate Screen Grid Drive Output</td>
<td>Voltage Current Diss. Diss. Diss. Power Power</td>
</tr>
<tr>
<td></td>
<td>Voltage Voltage Voltage Current (volts) (amps) (volt) (amps) (watts)</td>
<td></td>
</tr>
<tr>
<td>Class A</td>
<td>6000</td>
<td>2.0</td>
</tr>
<tr>
<td>Class AB</td>
<td>5000</td>
<td>750</td>
</tr>
</tbody>
</table>

## Power Grid Tube Handbook

A comprehensive book providing information on design, construction and operation of power grid tubes has been published by EIMAC, Division of Varian.

The 158-page book, "THE CARE AND FEEDING OF POWER GRID TUBES," discusses the types and uses of high power vacuum tubes from diodes to pentodes and includes special tubes such as zero-bias triodes and super power tetrodes.

In addition, cooling, emission, secondary emission, high frequency operation, limiting factors in tube design and operation are discussed in the book. Electron tube materials used in cathodes, grids, filaments, anodes and envelopes as well as construction methods are also explained.

Primarily written as a guide to the tube specifier and circuit designer, it is also useful to amateur radio enthusiasts and teachers.

The $3.95 book is being distributed by Stacey's Scientific Book Center, 2575 Hanover Avenue, Palo Alto, California, and is available through your nearest Eimac Distributor.
### 8252 / 4PR60B

The Eimac 4PR60B is a high-vacuum, radial-beam tetrode intended for pulse modulator service in circuits employing resistive loads. The 4PR60B supersedes the 4PR60A and unilaterally replaces the 715C and 5D21. It is recommended for use in equipment of new design.

**Maximum Plate Voltage**: 20 kilovolts  
**Maximum Pulse Plate Current**: 18 amperes  
**Cooling**: Radiation and Convection  

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>4PR60B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament:</td>
<td>Oxide-coated, anode-connected</td>
</tr>
</tbody>
</table>
| Heater:         | Voltage: 26.0 volts  
|                 | Current: 1.95 to 2.35 amperes  
| Capacitances (Grounded Cathode): | Input: 35.0 to 50.0 pF  
|                 | Output: 6.0 to 11.0 pF  
|                 | Feed-through: 2.0 pF  
| Socket:         | E. F. Johnson Co. No. 122-234  
| Maximum Plate Temp.: | 200 °C  
| Maximum Plate Voltage: | 20 kilovolts  
| Maximum Diameter: | 3.063 inches  
| Net Weight: | 10 ounces |

### 8252W / 4PR60C

The Eimac 4PR60C is a ruggedized version of the 4PR60B. It is a high-vacuum, radial-beam tetrode intended for pulse modulator service in circuits employing resistive loads. The 4PR60C supersedes the 4PR60A and unilaterally replaces the 715C and 5D21. It is recommended for use in equipment of new design.

**Maximum Plate Voltage**: 20 kilovolts  
**Maximum Pulse Plate Current**: 18 amperes  
**Cooling**: Radiation and Convection  

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>4PR60C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament:</td>
<td>Oxide-coated, anode-connected</td>
</tr>
</tbody>
</table>
| Heater:         | Voltage: 26.0 volts  
|                 | Current: 1.95 to 2.35 amperes  
| Capacitances (Grounded Cathode): | Input: 35.0 to 50.0 pF  
|                 | Output: 6.0 to 11.0 pF  
|                 | Feed-through: 2.0 pF  
| Socket:         | E. F. Johnson Co. No. 122-234  
| Maximum Plate Temp.: | 200 °C  
| Maximum Plate Voltage: | 20 kilovolts  
| Maximum Diameter: | 3.063 inches  
| Net Weight: | 10 ounces |

### 8187 / 4PR65A

A compact, high-vacuum, radial-beam tetrode incorporating a pyrovac plate and non-emitting grids, intended for pulse-modulator service.

It is recommended for use in new equipments whenever long pulse durations, high duty factors, or high voltages preclude the use of tubes employing oxide-coated cathodes.

**Maximum Plate Voltage**: 15 kilovolts  
**Maximum Pulse Plate Current**: 1 ampere  
**Cooling**: Radiation and Convection  

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>4PR65A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament:</td>
<td>Thoriated, anode-connected</td>
</tr>
</tbody>
</table>
| Voltage:        | Current: 3.2 to 3.8 amperes  
| Capacitances (Grounded Cathode): | Input: 6.0 to 8.3 pF  
|                 | Output: 1.9 to 2.5 pF  
|                 | Feed-through: 0.12 pF  
| Base:           | 5-pin metal shell  
| or Johnson 122-101 |
| Maximum Base-Plate Temp.: | 200 °C  
| Max. Plate Temp.: | 225 °C  
| Maximum Diameter: | 2.38 inches  
| Net Weight: | 3 ounces |

### 8247 / 4PR125A

A compact, high-vacuum, radial-beam tetrode incorporating a pyrovac plate and non-emitting grids, intended for pulse-modulator service.

It is recommended for use in new equipments whenever long pulse durations, high duty factors, or high voltages preclude the use of tubes employing oxide-coated cathodes.

**Maximum Plate Voltage**: 18 kilovolts  
**Maximum Pulse Plate Current**: 1.8 amperes  
**Cooling**: Radiation and Forced Air  

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>4PR125A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament:</td>
<td>Thoriated, anode-connected</td>
</tr>
</tbody>
</table>
| Voltage:        | Current: 6.0 to 7.0 amperes  
| Capacitances (Grounded Cathode): | Input: 9.2 to 12.4 pF  
|                 | Output: 2.5 to 3.5 pF  
|                 | Feed-through: 0.07 pF  
| Base:           | 5-pin metal shell  
| or Johnson 122-275 |
| Maximum Base-Plate Temp.: | 200 °C  
| Maximum Plate Voltage: | 18.75 kilovolts  
| Maximum Diameter: | 2.81 inches  
| Net Weight: | 6.5 ounces |

### Maximum Ratings

- **DC Plate Voltage**: 30 kilovolts  
- **Peak Plate Current**: 15 amperes  
- **Grid Dissipation**: 50 watts  

### Typical Operation

- **DC Plate Voltage**: 28 kilovolts  
- **Peak Plate Voltage**: 26.0 volts  
- **Peak Output Power**: 375 kilowatts  
- **Duty**: 0.2 percent  

### Maximum Characteristics

- **DC Plate Voltage**: 20 kilovolts  
- **DC Screen Voltage**: 1.5 kilovolts  
- **Peak Plate Current**: 18 amperes  
- **Grid Dissipation**: 8 watts  

### Typical Operation

- **DC Plate Voltage**: 20 kilowatts  
- **Peak Plate Voltage**: 18.75 kilovolts  
- **Peak Output Power**: 552 watts  
- **Duty**: 0.1 percent  
- **Duty Duration**: 5 microseconds  

### Maximum Characteristics

- **DC Plate Voltage**: 15 kilovolts  
- **DC Screen Voltage**: 2.5 kilovolts  
- **Peak Plate Current**: 18 amperes  
- **Grid Dissipation**: 10 watts  

### Typical Operation

- **DC Plate Voltage**: 15 kilowatts  
- **Peak Plate Voltage**: 14 kilowatts  
- **Peak Output Power**: 14 watts  
- **Duty**: 5.0 percent  

### Maximum Characteristics

- **DC Plate Voltage**: 18 kilowatts  
- **DC Screen Voltage**: 1.2 kilowatts  
- **Peak Plate Current**: 13.8 amperes  
- **Grid Dissipation**: 5 watts  

### Typical Operation

- **DC Plate Voltage**: 18 kilowatts  
- **Peak Plate Voltage**: 17.0 kilowatts  
- **Peak Output Power**: 30 watts  
- **Duty**: 4.0 percent  

### Maximum Characteristics

- **DC Plate Voltage**: 30 kilowatts  
- **DC Screen Voltage**: 5.6 kilowatts  
- **Peak Plate Current**: 15 amperes  
- **Grid Dissipation**: 30 watts  

### Typical Operation

- **DC Plate Voltage**: 30 kilowatts  
- **Peak Plate Voltage**: 26.0 volts  
- **Peak Output Power**: 375 kilowatts  
- **Duty**: 0.2 percent
### 8248 / 4PR250C

- **Characteristics**: Filament: Thoriated tungsten, 5.0 volts, 13.5 to 14.7 amperes.
- **Maximum Ratings**: DC plate voltage 30,000 volts, peak plate current 20 amperes, plate dissipation 1,000 watts, grid dissipation 5 watts.

### 8189 / 4PR1000A

- **Characteristics**: Filament: Thoriated tungsten, 20.0 to 22.7 amperes.
- **Maximum Ratings**: DC plate voltage 30,000 volts, peak plate current 6 amperes, peak drive power 1000 watts.

### 8189 / 4PR1000B

- **Characteristics**: Filament: Thoriated tungsten, 20.0 to 22.7 amperes.
- **Maximum Ratings**: DC plate voltage 30,000 volts, peak plate current 6 amperes, peak drive power 1000 watts.

### 8188 / 4PR400A

- **Characteristics**: Filament: Thoriated tungsten, 20.0 to 22.7 amperes.
- **Maximum Ratings**: DC plate voltage 30,000 volts, peak plate current 6 amperes, peak drive power 1000 watts.

### 284

- **Characteristics**: Filament: Thoriated tungsten, 5.0 volts, 13.5 to 14.7 amperes.
- **Maximum Ratings**: DC plate voltage 30,000 volts, peak plate current 6 amperes, peak drive power 1000 watts.

---

### Table: Eimac SK-400 Details

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Plate Voltage</td>
<td>30 kilovolts</td>
</tr>
<tr>
<td>Maximum Pulse Plate Current</td>
<td>8 amperes</td>
</tr>
<tr>
<td>COOLING</td>
<td>Radiation and Forced Air</td>
</tr>
</tbody>
</table>

---

### Table: 8189A Details

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Plate Voltage</td>
<td>30 kilovolts</td>
</tr>
<tr>
<td>Maximum Pulse Plate Current</td>
<td>8 amperes</td>
</tr>
<tr>
<td>COOLING</td>
<td>Radiation and Forced Air</td>
</tr>
</tbody>
</table>

---

### Table: 284 Details

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Dissipation</td>
<td>1000 watts</td>
</tr>
<tr>
<td>Frequency for Maximum Ratings</td>
<td>30 MHz</td>
</tr>
<tr>
<td>COOLING</td>
<td>Radiation and Forced Air</td>
</tr>
</tbody>
</table>
Sockets and Accessories

These sockets and accessories are specifically designed for use with Eimac tubes. Choice of the proper socket insures longer tube life and better performance. All sockets incorporate low loss insulating materials. All metal parts are plated for corrosion protection. Tube contact surfaces are non-ferrous spring alloy, silver plated for good rf conductivity and heat treated for positive contact and long life. Open construction permits adequate air flow for tube cooling.

**Air-System Socket**

<table>
<thead>
<tr>
<th>TUBE</th>
<th>BYPASS CAPACITOR</th>
<th>ELEMENT BYPASSED</th>
<th>Grounded Contacts</th>
<th>CHIMNEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK-184</td>
<td>8295</td>
<td>2000</td>
<td>screen</td>
<td>C-184</td>
</tr>
<tr>
<td>SK-184A</td>
<td>8295A</td>
<td>2000</td>
<td>screen</td>
<td>C-184</td>
</tr>
<tr>
<td>SK-209B</td>
<td>8432</td>
<td>2000</td>
<td>screen</td>
<td>C-209</td>
</tr>
<tr>
<td>SK-265A</td>
<td>254</td>
<td>2000</td>
<td>screen</td>
<td>C-265</td>
</tr>
<tr>
<td>SK-291A</td>
<td>290</td>
<td>2000</td>
<td>screen</td>
<td>C-290</td>
</tr>
<tr>
<td>SK-300</td>
<td>4CK5000A</td>
<td>none†</td>
<td>none</td>
<td>SK-300</td>
</tr>
<tr>
<td>SK-306</td>
<td>4CK5000B</td>
<td>none†</td>
<td>none</td>
<td>SK-306</td>
</tr>
<tr>
<td>SK-310</td>
<td>4CX20.000A, 4CV35.000A</td>
<td>none†</td>
<td>none</td>
<td>SK-310</td>
</tr>
<tr>
<td>SK-400</td>
<td>4-125A</td>
<td>none</td>
<td>none</td>
<td>SK-406</td>
</tr>
<tr>
<td>SK-406</td>
<td>4-250A</td>
<td>none</td>
<td>none</td>
<td>SK-406</td>
</tr>
<tr>
<td>SK-410</td>
<td>4-250A</td>
<td>none</td>
<td>none</td>
<td>SK-416</td>
</tr>
<tr>
<td>SK-500</td>
<td>4-400A</td>
<td>none</td>
<td>none</td>
<td>SK-506</td>
</tr>
<tr>
<td>SK-510</td>
<td>4-1000Z</td>
<td>none</td>
<td>none</td>
<td>SK-506</td>
</tr>
<tr>
<td>SK-600</td>
<td>4X150A</td>
<td>none</td>
<td>cath.</td>
<td>SK-606</td>
</tr>
<tr>
<td>SK-602</td>
<td>4X150A</td>
<td>none</td>
<td>cath.</td>
<td>SK-606</td>
</tr>
<tr>
<td>SK-611‡</td>
<td>4CX250F</td>
<td>2700</td>
<td>cath, pl, &amp; 1 hr</td>
<td>none</td>
</tr>
</tbody>
</table>

* SK-300A has low pressure drop characteristic; recommended for new designs.

†Accessory screen bypass cap, available as Y-433 (3600 pf, 1800 DCWV) for the SK-300 and SK-300A.

* Body, contacts, & retainer supplied separately; no bypass capacitor.

† Low inductance version.
### SOCKETS AND ACCESSORIES

#### SK-604
- This tube puller is designed for use in removing coaxial-base and 9-pin-base tubes from their sockets without damage. The 4X1000 series and 4CX250 series tubes may be removed with this puller. SK-604A has a beryllium finish, SK-604B is nickel-plated.

#### SK-605
- These special pliers are designed for use in removing breechblock base tubes from their sockets without damage. The 4CX300 series and 4CX1000 series tubes may be removed with these pliers.

#### AIR-SYSTEM SOCKET

<table>
<thead>
<tr>
<th>TUBE</th>
<th>CAP. (pf)</th>
<th>VOLTAGE (DC)</th>
<th>ELEMENT</th>
<th>GROUNDED CONTACTS</th>
<th>CHIMNEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>4X150A</td>
<td>2700</td>
<td>1000</td>
<td>screen</td>
<td>none</td>
<td>SK-606</td>
</tr>
</tbody>
</table>

* Bypass capacitor is encapsulated for moisture resistance.

#### SK-660A
- For conduction-cooled tube types.
- Ceramic body with threaded mounting inserts.
- SK-660 with threaded mounting inserts deleted.
- R.C.O. body only, no mounting bracket.
- SK-661 with clamp assembly, matches tube type 450250A with SK-19010 R.C.O. block attached to its anode.

#### SK-700
- Bypass capacitor has long external arc path.
- Body insulation in yellow.

<table>
<thead>
<tr>
<th>TUBE</th>
<th>CAP. (pf)</th>
<th>VOLTAGE (DC)</th>
<th>ELEMENT</th>
<th>GROUNDED CONTACTS</th>
<th>CHIMNEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>4CN15A</td>
<td>1100</td>
<td>400</td>
<td>screen</td>
<td>1 htr &amp; cath.</td>
<td>SK-606</td>
</tr>
</tbody>
</table>

* SK-761 is a low-capacitance version of the SK-760.
## SOCKETS AND ACCESSORIES

### Table: Bypass Capacitor

<table>
<thead>
<tr>
<th>AIR-SYSTEM SOCKET</th>
<th>TUBE</th>
<th>BYPASS CAPACITOR</th>
<th>GROUNDED CONTACTS</th>
<th>CHIMNEY</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK-800B</td>
<td>4CX1000A</td>
<td>none</td>
<td>screen</td>
<td>SK-806</td>
</tr>
<tr>
<td>SK-810B</td>
<td>4CW2000A</td>
<td>none</td>
<td>cathode</td>
<td>SK-806</td>
</tr>
<tr>
<td>SK-820B</td>
<td>4CX1000A</td>
<td>none</td>
<td>screen</td>
<td>SK-806</td>
</tr>
<tr>
<td>SK-830A</td>
<td>4CX1000K</td>
<td>none</td>
<td>screen</td>
<td>SK-806</td>
</tr>
<tr>
<td>SK-831</td>
<td>4CX1000A</td>
<td>none</td>
<td>screen</td>
<td>SK-806</td>
</tr>
<tr>
<td>SK-840</td>
<td>5CX1500A</td>
<td>none</td>
<td>screen</td>
<td>SK-806</td>
</tr>
<tr>
<td>SK-860</td>
<td>3CX1000A</td>
<td>none</td>
<td>screen</td>
<td>SK-816</td>
</tr>
<tr>
<td>SK-870</td>
<td>3CX1000A</td>
<td>none</td>
<td>screen</td>
<td>SK-816</td>
</tr>
</tbody>
</table>

* Screen bypass capacitor isolated from screen contacts.

† Chimney includes amode clamp.

### Table: Custom Socket Design

For special applications which require features different from those standard sockets, custom designed sockets are offered. These may be modifications of the standard sockets or completely new designs, manufactured to customer drawings or Eimac design. Common modifications include: contact spacing, mounting features, encapsulation of components, grounded contacts, bypass capacitors, insulating materials, contact materials, and plating.

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CUSTOM SOCKET DESIGN

For special applications which require features different from those standard sockets, custom designed sockets are offered. These may be modifications of the standard sockets or completely new designs, manufactured to customer drawings or Eimac design. Common modifications include: contact spacing, mounting features, encapsulation of components, grounded contacts, bypass capacitors, insulating materials, contact materials, and plating.
In order to take the guess work out of using vapor cooling, Eimac has developed a complete line of accessories to complement its series of vapor-cooled tubes. All the components labeled in the system at right are available from Eimac. For more information on how this cooling technique can improve the performance of your equipment, write for a free copy of Application Bulletin Number 11, "The Care and Feeding of Vapor-Phase Cooling." Also available from Eimac is application engineering assistance in planning vapor-cooled systems. Eimac representatives can put you in touch with the same people who produced the first completely integrated vapor-phase cooling packages.

### Table: Vapor-Phase Cooling Accessories

<table>
<thead>
<tr>
<th>Tube Type Number</th>
<th>Tube Type</th>
<th>Maximum Plate Dissipation (kW)</th>
<th>Socket</th>
<th>Boilers</th>
<th>Control Box</th>
<th>Reservoir</th>
<th>Steam Line</th>
<th>Water Line</th>
<th>Pressure Equalizer Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4CV8,000A</td>
<td>Tetrode</td>
<td>8</td>
<td>SK-1490</td>
<td>BR-101</td>
<td>CB-102</td>
<td>RE-100</td>
<td>043028N</td>
<td>AF-100</td>
<td>AD-100</td>
</tr>
<tr>
<td>4CV20,000A</td>
<td>Tetrode</td>
<td>20</td>
<td>SK-310</td>
<td>BR-200</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043030N</td>
<td>AF-200</td>
<td>AD-200</td>
</tr>
<tr>
<td>3CV30,000A</td>
<td>Triode</td>
<td>30</td>
<td>SK-1310</td>
<td>BR-200</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043026N</td>
<td>AF-200</td>
<td>AD-200</td>
</tr>
<tr>
<td>4CV35,000A</td>
<td>Tetrode</td>
<td>35</td>
<td>SK-310</td>
<td>BR-200</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043026N</td>
<td>AF-200</td>
<td>AD-200</td>
</tr>
<tr>
<td>4CV50,000E</td>
<td>Tetrode</td>
<td>50</td>
<td>SK-2000</td>
<td>BR-700</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4CV75,000</td>
<td>Tetrode</td>
<td>75</td>
<td>SK-1500</td>
<td>BR-320</td>
<td>CB-322</td>
<td>RE-200</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7480</td>
<td>Triode</td>
<td>80</td>
<td>SK-1600 Series</td>
<td>BR-400</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043033N</td>
<td>AF-300</td>
<td>AD-300</td>
</tr>
<tr>
<td>4CV100,000C</td>
<td>Tetrode</td>
<td>100</td>
<td>SK-1510</td>
<td>BR-300</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043033N</td>
<td>AF-300</td>
<td>AD-300</td>
</tr>
<tr>
<td>4CV100,000E</td>
<td>Tetrode</td>
<td>100</td>
<td>SK-2000</td>
<td>BR-200</td>
<td>CB-202</td>
<td>RE-200</td>
<td>043033N</td>
<td>AF-300</td>
<td>AD-300</td>
</tr>
<tr>
<td>4CV250,000V</td>
<td>Tetrode</td>
<td>250</td>
<td>SK-1700 Series</td>
<td>BR-605</td>
<td>CB-202</td>
<td>-</td>
<td>5½&quot; OD</td>
<td>1½&quot; OD</td>
<td>-</td>
</tr>
</tbody>
</table>

1. One boiler per tube except BR-500 which accommodates two tubes.
2. Solenoid Operated Valve #124281 and Pressure Interlock #124434 may be used in all system combinations.
3. Capacities of the reservoirs are: RE-100 = 1 qt., RE-200 = 2 qt., RE-300 = 1 gal.
4. For multiple tube systems, these components are multiplied by the number of tubes used.
5. Includes water-cooled filament and grid connections.

Eimac will recommend condensers for specific system cooling requirements.
HEAT DISSIPATING CONNECTORS

Eimac HR Heat-Dissipating Connectors are used to make electrical connections to the plate and grid terminals of Eimac Tubes, and at the same time, provide efficient heat transfer from the tube element and glass seal to the air. These connectors are machined from solid dural rod and are supplied with the necessary set screws.

<table>
<thead>
<tr>
<th>TYPE*</th>
<th>Length</th>
<th>Dia.</th>
<th>Hole Dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR-1</td>
<td>11/16&quot;</td>
<td>1/2&quot;</td>
<td>.052&quot;</td>
</tr>
<tr>
<td>HR-2</td>
<td>11/16&quot;</td>
<td>1/2&quot;</td>
<td>.062&quot;</td>
</tr>
<tr>
<td>HR-3</td>
<td>11/16&quot;</td>
<td>1/2&quot;</td>
<td>.072&quot;</td>
</tr>
<tr>
<td>HR-4</td>
<td>7/8&quot;</td>
<td>3/4&quot;</td>
<td>.102&quot;</td>
</tr>
<tr>
<td>HR-5</td>
<td>7/8&quot;</td>
<td>3/4&quot;</td>
<td>.127&quot;</td>
</tr>
<tr>
<td>HR-6</td>
<td>7/8&quot;</td>
<td>3/4&quot;</td>
<td>.357&quot;</td>
</tr>
<tr>
<td>HR-7</td>
<td>1-11/32&quot;</td>
<td>1-3/8&quot;</td>
<td>.127&quot;</td>
</tr>
<tr>
<td>HR-8</td>
<td>1-11/32&quot;</td>
<td>1-3/8&quot;</td>
<td>.575&quot;</td>
</tr>
<tr>
<td>HR-9</td>
<td>4-11/32&quot;</td>
<td>1-3/8&quot;</td>
<td>.569&quot;</td>
</tr>
<tr>
<td>HR-10</td>
<td>1-11/32&quot;</td>
<td>1-3/8&quot;</td>
<td>.510&quot;</td>
</tr>
</tbody>
</table>

*For marking per MIL-STD-130B add prefix letter "M" to the part number for connectors HR-4 through HR-10. Note HR-1 through HR-3 are too small to permit marking.

RECOMMENDED CONNECTORS FOR USE WITH EACH EIMAC TUBE TYPE

<table>
<thead>
<tr>
<th>TUBE</th>
<th>Plate Connector</th>
<th>Grid Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR-1</td>
<td>HR-1</td>
<td>HR-1</td>
</tr>
<tr>
<td>HR-2</td>
<td>HR-2</td>
<td>HR-2</td>
</tr>
<tr>
<td>HR-3</td>
<td>HR-3</td>
<td>HR-3</td>
</tr>
<tr>
<td>HR-4</td>
<td>HR-4</td>
<td>HR-4</td>
</tr>
<tr>
<td>HR-5</td>
<td>HR-5</td>
<td>HR-5</td>
</tr>
<tr>
<td>HR-6</td>
<td>HR-6</td>
<td>HR-6</td>
</tr>
<tr>
<td>HR-7</td>
<td>HR-7</td>
<td>HR-7</td>
</tr>
<tr>
<td>HR-8</td>
<td>HR-8</td>
<td>HR-8</td>
</tr>
<tr>
<td>HR-9</td>
<td>HR-9</td>
<td>HR-9</td>
</tr>
<tr>
<td>HR-10</td>
<td>HR-10</td>
<td>HR-10</td>
</tr>
</tbody>
</table>

OTHER PRODUCTS

PREFORMED CONTACT FINGER STOCK

Eimac Preformed Finger Stock is a prepared strip of spring material slotted and formed into a series of fingers designed to make a sliding contact. It is especially suitable for making connections to tubes with coaxial terminals or to moving parts, such as long-line and cavity circuits or screen-room doors. Eimac finger stock is available in 9 different shapes and sizes, three of which incorporate "spooned" contact fingers. All strips come in standard 36 inch lengths. Standard stock is heat treated and silver plated. Also available without heat treating or plating.

<table>
<thead>
<tr>
<th>Type</th>
<th>Finger Radius (inches)</th>
<th>Finger Width (inches)</th>
<th>Slot Width (inches)</th>
<th>Slot Depth (inches)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF-100</td>
<td>1/16</td>
<td>1/8</td>
<td>0.040</td>
<td>9/32</td>
<td>spooned</td>
</tr>
<tr>
<td>CF-200</td>
<td>1/16</td>
<td>1/8</td>
<td>0.040</td>
<td>9/32</td>
<td>double-edged</td>
</tr>
<tr>
<td>CF-300</td>
<td>13/64</td>
<td>1/8</td>
<td>0.040</td>
<td>29/32</td>
<td>finger tip has reverse radius</td>
</tr>
<tr>
<td>CF-400</td>
<td>13/64</td>
<td>1/8</td>
<td>0.040</td>
<td>35/64</td>
<td>double-edged</td>
</tr>
<tr>
<td>CF-500</td>
<td>15/32</td>
<td>1/8</td>
<td>0.040</td>
<td>7/8</td>
<td>finger tip has reverse radius</td>
</tr>
<tr>
<td>CF-600</td>
<td>15/32</td>
<td>1/8</td>
<td>0.040</td>
<td>29/32</td>
<td>double-edged with reverse tip radius</td>
</tr>
<tr>
<td>CF-700</td>
<td>15/32</td>
<td>1/8</td>
<td>0.040</td>
<td>9/32</td>
<td>spooned</td>
</tr>
<tr>
<td>CF-800</td>
<td>15/32</td>
<td>1/8</td>
<td>0.040</td>
<td>15/32</td>
<td>spooned and bent</td>
</tr>
<tr>
<td>CF-900</td>
<td>0.030</td>
<td>1/16</td>
<td>0.020</td>
<td>15/32</td>
<td>smallest fingers</td>
</tr>
</tbody>
</table>

Eimac Contact Finger Stock is available on special factory order in the following semi-finished states:

- Slotted and formed (Not heat treated or plated)
- Slotted, formed, and heat treated (Not plated)
- Slotted, formed, and plated (Net heat treated)

VACUUM SWITCHES

Eimac Vacuum Switches are offered for pulse service or rf switching. For details inquire of Eimac Power Grid Division.

<table>
<thead>
<tr>
<th>Type</th>
<th>Intended Service</th>
<th>Insulation</th>
<th>Peak Test Voltage DC</th>
<th>VACUUM SWITCHES</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS-2</td>
<td>RF</td>
<td>Glass</td>
<td>5a (30 MHz)</td>
<td>20 KV 12 V</td>
</tr>
<tr>
<td>VS-6</td>
<td>Pulse</td>
<td>Glass</td>
<td>150a (Pulse)</td>
<td>22 KV 12 V</td>
</tr>
<tr>
<td>VS-8</td>
<td>Medical Defibrillator</td>
<td>Glass</td>
<td>—</td>
<td>15 KV 30 V</td>
</tr>
<tr>
<td>VS-9</td>
<td>RF</td>
<td>Ceramic</td>
<td>4a (16 MHz)</td>
<td>4 KV 26.5 V</td>
</tr>
</tbody>
</table>
Eimac will be glad to furnish additional information on the products listed in this catalog. Simply note your product interest on a reply card and mail. Prompt response is assured.

Please send me further information on the following Eimac products:

My application is

Special requirements

Name

Title or Position

Company

Address

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301 INDUSTRIAL WAY • SAN CARLOS, CALIFORNIA

Date

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Company

Address

EIMAC division of varian

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FACTORY LOCATIONS

EIMAC division of Varian
301 Industrial Way
San Carlos, California 94070
Telephone: (415) 592-1221
TWX: 910-376-4893

EIMAC division of Varian
1678 South Pioneer Road
Salt Lake City, Utah 84104
Telephone: (801) 487-7561

FIELD SALES OFFICES

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3110 Maple Drive N.E.
Suite 203
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TWX: 810-751-8569

ALBUQUERQUE
9000 Menaul Boulevard NE
Albuquerque, New Mexico 87112
Telephone: (505) 296-1248

BOSTON
400 Wyman Street
Waltham, Massachusetts 02154
Telephone: (617) 891-4560
TWX: 710-324-0688

CHICAGO
Executive Plaza Office Bldg.
205 West Touhy Avenue
Park Ridge, Illinois 60068
Telephone: (020) 15 94 10
TWX: 27 642

DALLAS
First Bank & Trust Building
P.O. Box 689
811 South Central Expressway
Richardson, Texas 75081
Telephone: (214) 235-2385
TWX: 910-896-0640

INTERNATIONAL SALES OFFICES

AUSTRALIA
Varian Pty. Ltd.
38 Oxley Street
Crows Nest
Sydney, Australia
Telephone: 430-673
Telex: 790-20096

Benelux
Varian Associates Holland N.V.
Maassluisstraat 100
P.O. Box 9158
Amsterdam, Holland
Telephone: (020) 15 94 10
Telex: 14 099

BRAZIL
Varian Industria e Comercio Ltda.
Av. Paulista, 2073-18°-coli. 1824
Sao Paulo - ZP 3, Brazil
Telephone: 80 99 27
Cable: Varian Sao Paulo

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45 River Road
Georgetown, Ontario, Canada
Telephone: (416) 877-6901
Telex: 022-95628

FRANCE
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Thomson-Varian S.A.
6 rue Marx Nikis
75 Paris 15e
France
Telephone: 783.91.00
Telex: 25 873

POWER GRID
Varian S.A.
Quartier de Courbevoie
Boite Postale No. 12
91 Orsay
France
Telephone: 920-8312
Telex: 27 642

GERMANY
Varian GmbH
Breitwiesenstrasse 9
7 Stuttgart-Vaihingen
Germany
Telephone: (0711) 73 20 28
Telex: 7.255614

ITALY
Varian SpA
Via Varian
10040 Leini (Torino)
Italy
Telephone: (02) 25 80 86
Telex: 21 228

PHOENIX
77 West Third Avenue
Scottsdale, Arizona 85251
Telephone: (602) 947-5461
TWX: 910-950-1298

SAN FRANCISCO
4940 El Camino Real
Los Altos, California 94022
Telephone: (415) 968-7630
TWX: 910-379-6446

SYRACUSE
113 Twin Oaks Drive
Syracuse, New York 13206
Telephone: (315) 446-8513
TWX: 510-866-0434

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714 Church Street
Alexandria, Virginia 22314
Telephone: (703) 549-8205
TWX: 710-832-9823

JAPAN
Marubun Co., Ltd.
1-2 Chome, Otemachi
Nihombashi, Chuo-Ku
Tokyo, Japan
Telephone: 662-8151
Telex: 22-957
Cable: Marubun, Tokyo

SCANDINAVIA
Varian AB
Skyteholmsvagen 7D
P.O. Box 1099
Sodra, Sweden
Telephone: (08) 82 00 30
Telex: 10 403

SWITZERLAND
Varian AG
Baarerstrasse 77
6300 Zug, Switzerland
Telephone: (042) 21 45 55
Telex: 78 641

UNITED KINGDOM AND IRELAND
Varian Associates Ltd.
Russell House
Molesley Road
Walton-on-Thames
Surrey, England
Telephone: Walton-on-Thames 2 87 66
Telex: 261 351