The Eimac 750TL is a medium-mu power triode intended for use as an amplifier, oscillator, or modulator. It has a maximum plate dissipation rating of 750 watts and a maximum plate voltage rating of 10,000 volts at frequencies up to 40 Mc. The 750TL is cooled by air-circulation and radiation.

The 750TL in class-C r-f service will deliver up to 3000 watts plate power output with 125 watts driving power. Two 750TL's in class-AB, modulator service will deliver up to 3500 watts maximum-signal plate power output with 46 watts driving power.

**GENERAL CHARACTERISTICS**

**Filament**
- Thoriated Tungsten
- Voltage: 7.5 volts
- Current: 21.0 amperes

**Amplification Factor (Average)**
- Grid-Plate: 5.8 µpf
- Grid-Filament: 8.5 µpf
- Transconductance (Ig = 250 ma, Es = 5000 V)
- 1.2 µpf

**Highest Frequency for Maximum Ratings**
- 3500 µmhos
- 40 Mc

**MECHANICAL**
- **Base**
- **Connections**
- **Socket**
- **Mounting Position**
- **Cooling**
- **Recommended Plate and Grid Heat Dissipating Connectors**
- **Maximum Overall Dimensions:**
  - Length: Special 4-pin
  - Diameter: See outline drawing
  - Net Weight (Average):
  - Shipping Weight (Average):
  - Eimac HR-8
  - 17.0 inches
  - 7.13 inches
  - 2.9 pounds
  - 13 pounds

**AUDIO-FREQUENCY POWER AMPLIFIER OR MODULATOR**

**MAXIMUM RATINGS (Per tube)**
- D-C Plate Voltage: 7500 volts
- D-C Grid Voltage: 5000 volts
- Zero-Signal D-C Plate Current: 100 ma
- Max-Signal D-C Plate Current: 144 ma
- Effective Load Plate-to-Plate: 8270 ohms
- Plate A-F Grid Voltage (per tube):
  - Peak: 400 volts
  - Average: 240 volts
- Max-Signal Plate Power Input:
  - 3900 watts
- Max-Signal Plate Power Output:
  - 2300 watts

*Adjust to stated zero-signal plate current.

**TYPICAL OPERATION**

<table>
<thead>
<tr>
<th>Class-A/B (Sinusoidal wave)</th>
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</thead>
<tbody>
<tr>
<td><strong>MAXIMUM RATINGS (Per tube)</strong></td>
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<tr>
<td><strong>Plate A-F Grid Voltage (per tube)</strong></td>
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<tr>
<td><strong>Peak R-F Grid Voltage</strong></td>
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<td><strong>Plate Power Input</strong></td>
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- **Zero-Signal D-C Plate Current:** 100 ma
- **Max-Signal D-C Plate Current:** 144 ma
- **Effective Load Plate-to-Plate:** 8270 ohms
- **Plate A-F Grid Voltage (per tube):**
  - Peak: 400 volts
  - Average: 240 volts
- **Max-Signal Plate Power Input:** 3900 watts
- **Max-Signal Plate Power Output:** 2300 watts

*Adjust to stated zero-signal plate current.

**RADIO-FREQUENCY POWER AMPLIFIER OR OSCILLATOR**

**Class-C Telegraphy or FM Telephony (Key-down conditions, per tube)**
- **MAXIMUM RATINGS (Frequencies up to 40 Mc.)**
- **D-C Plate Voltage:** 7500 volts
- **D-C Grid Voltage:** 5000 volts
- **D-C Plate Current:** 713 ma
- **D-C Grid Current:** 120 ma
- **Peak R-F Grid Voltage:** 805 volts
- **Grid Dissipation:** 155 watts
- **Plate Power Input:** 2140 watts
- **Plate Power Output:** 1390 watts

**TYPICAL OPERATION**

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- **D-C Plate Voltage:** 7500 volts
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- **D-C Plate Current:** 713 ma
- **D-C Grid Current:** 120 ma
- **Peak R-F Grid Voltage:** 805 volts
- **Grid Dissipation:** 155 watts
- **Plate Power Input:** 2140 watts
- **Plate Power Output:** 1390 watts

**PLATE-MODULATED RADIO-FREQUENCY AMPLIFIER**

**TYPICAL OPERATION**

<table>
<thead>
<tr>
<th>Class-G TELEPHONY (Carrier conditions, per tube)</th>
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- **D-C Plate Voltage:** 7500 volts
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- **Peak R-F Grid Voltage:** 805 volts
- **Grid Dissipation:** 155 watts
- **Plate Power Input:** 2140 watts
- **Plate Power Output:** 1390 watts

*Approximate values*
APPLICATION

MECHANICAL
Mounting—The 750TL must be mounted vertically, base down or up. The plate and grid leads should be flexible. The tube must be protected from vibration and shock.

Cooling—Heat Dissipating Connectors (Eimac HR-8 or equivalent) must be used at the plate and grid terminals of the 750TL. Unobstructed circulation of air around the tube is required in sufficient quantity to prevent the seal temperatures from exceeding 225°C. Forced ventilation of compartments or equipment in which the tube is located is usually desirable. Forced movement of air across the tube seals and envelope is always beneficial, though not necessarily required.

Tube temperatures may be measured with the aid of "Tempilaq", a temperature-sensitive lacquer manufactured by the Tempil Corporation, 132 West 22nd Street, New York 11, N. Y.

ELECTRICAL
Filament Voltage—For maximum tube life the filament voltage, as measured directly at the filament pins, should be the rated value of 7.5 volts. Variations should be kept within the range of 7.5 to 7.85 volts. All four socket terminals should be used, placing two in parallel for each filament connection.

Bias Voltage—Although there is no maximum limit placed on the bias voltage which may be used with the 750TL, there is little advantage in using bias voltages in excess of those given under “Typical Operation”, except in certain very specialized applications.

When grid-leak bias is used, suitable protective means must be provided to prevent excessive plate dissipation in the event of loss of excitation, and the grid-leak resistor should be made adjustable to facilitate maintaining the bias voltage and plate current at the desired value from tube to tube.

Grid Dissipation—Grid dissipation may be calculated from the following expression:

\[ P_G = e_{m_p}I_C \]

where: \( P_G \) — Grid dissipation, 
\( e_{m_p} \) — Peak positive grid voltage, and 
\( I_C \) — D-C grid current.

\( e_{m_p} \) may be measured by means of a suitable peak voltmeter connected between filament and grid.1 In equipment in which the plate loading varies widely, such as oscillators used for radio-frequency heating, care should be taken to make certain that the grid dissipation does not exceed the maximum rating of 100 watts under any conditions of loading.

Plate Dissipation—Under normal operating conditions, the plate dissipation of the 750TL should not be allowed to exceed the maximum rating. Plate dissipation in excess of the maximum rating is permissible for short periods of time, such as during tuning procedures.

1For suitable peak v.t.v.m. circuits see, for instance, "Vacuum Tube Ratings", Eimac News, January, 1945. This article is available in reprint form on request.
DRIVING POWER vs. POWER OUTPUT

The three charts on this page show the relationship of plate efficiency, power output and approximate grid driving power at plate voltages of 4000, 5000 and 6000 volts. These charts show combined grid and bias losses only. The driving power and power output figures do not include circuit losses. The plate dissipation in watts is indicated by $P_p$. Points A, B and C are identical to the typical Class-C operating conditions shown on the first page under 4000, 5000 and 6000 volts, respectively.