The Eimac 4PR60A is a high-vacuum tetrode intended for pulse-modulator service in circuits employing inductive or resistive loads. This tube unilaterally replaces the 715C and the 5D21.

The 4PR60A has a maximum plate dissipation rating of 60 watts, is cooled by radiation and convection, and delivers pulse power output in the range of 300 kilowatts with one kilowatt of pulse driving power.

**GENERAL CHARACTERISTICS**

**ELECTRICAL**

- **Cathode**: Oxide-coated, Unipotential
  - Heater Voltage: 26.0 volts
  - Heater Current: 2.25 amperes
  - Minimum Heating Time: 3 minutes

- **Direct Interelectrode Capacitances (Average)**
  - Grid-Plate (without shielding): 0.3 μf
  - Input: 43.0 μf
  - Output: 9.0 μf

**MECHANICAL**

- **Minimum Shock Test**: 200g
- **Base**: Fits E. F. Johnson Co. Socket Number 122-234 or equivalent
- **Mounting Position**: Any
- **Cooling**: Radiation and Convection
- **Recommended Heat Dissipating Plate Connector**: Eimac HR-8
- **Maximum Over-All Dimensions**
  - Length: 6 inches
  - Diameter: 3¾ inches
  - Net Weight: 12 ounces
  - Shipping Weight: 1.75 pounds

**RATINGS**

**MAXIMUM RATINGS—Pulse Modulator Service (Per Tube)**

- D-C Plate Voltage: 20 Max. Kilovolts
- D-C Screen Voltage: 1.5 Max. Kilovolts
- D-C Grid Voltage: -1.0 Max. Kilovolt
- Peak Positive Grid Voltage: 300 Max. Volts
- Peak Plate Current: 18 Max. Amperes
- Peak Positive Plate Voltage: 25 Max. Kilovolts
- Plate Dissipation (Average): 60 Max. Watts
- Screen Dissipation (Average): 8 Max. Watts
- Seal Temperatures: 200 Max. Deg. C

**DUTY**

For peak plate current in excess of 5 amperes, the duty shall not exceed 0.001, and the product of peak current in amperes and pulse duration in microseconds shall not exceed 40. The tube shall not be operated for longer than 5 microseconds in any 100 microseconds interval.

For peak plate current values of less than 5 amperes, the pulse duration-current factor of 40 applies, and the plate dissipation rating of 60 watts determines the maximum permissible duty.

**TYPICAL OPERATION**

**Pulse Modulator (Per Tube)**

- D-C Plate Voltage: 15.8 20.0 kilovolts
- Pulse Plate Current: 14.0 16.0 amperes
- D-C Screen Voltage: 1.25 1.25 kilovolts
- Pulse Screen Current: 4.0 3.0 amperes
- D-C Grid Voltage: -600 -600 volts
- Pulse Grid Current: 1.1 1.1 amperes
- Pulse Positive Grid Voltage: 100 100 volts
- Duty: .001 .001
- Pulse Length: 2 2 μsec
- Peak Positive Plate Voltage: 25 25 kilovolts
- Peak Plate Current: 16 16 amperes
- Pulse Power Input: 220 320 kilowatts
- Pulse Power Output: 210 305 kilowatts
- Plate Output Voltage: 15.0 19.0 kilovolts

*Screen grid series protective resistance shall be 20,000 ohms, minimum.
*Control grid series resistance shall be 100,000 ohms, maximum.
*Approximate values.

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*Indicates change from sheet dated 8-15-52.
MECHANICAL
Mounting—The 4PR60A may be mounted and operated in any position. A flexible connecting strap should be provided between the plate terminal and the external plate circuit.

The 4PR60A is designed to withstand 200g shocks of short duration transferred to the tube through clamps on the metal skirt. Such clamps must be shaped to fit the contour of the skirt and must be fastened to the tube before being tightened to the chassis in order that no distorting force will be applied. No lateral pressure or clamping action should be applied to the base pins or to any part of the tube other than the skirt. The skirt is internally connected to the cathode.

Adequate ventilation must be provided so that the seals and envelope under operating conditions do not exceed 200°C.

ELECTRICAL
Heater Voltage—The heater voltage, as measured directly at the heater pins, should be the rated value of 26.0 volts. Variations in heater voltage must be kept within the range from 23.4 to 28.6 volts.

Screen Dissipation—The average power dissipated by the screen of the 4PR60A must not exceed eight watts. A protective series resistance of not less than 20,000 ohms must be inserted in the screen-voltage supply circuit and the screen should be adequately by-passed directly to the cathode by means of a suitable capacitor.

Plate Voltage—The plate-supply voltage for the 4PR60A should not exceed 20 kilovolts. In circuits employing inductive loading, the peak instantaneous plate voltage should not exceed 25 kilovolts.

Plate Dissipation—Under normal operating conditions, the plate dissipation of the 4PR60A should not be allowed to exceed 60 watts. Plate dissipation in excess of maximum rating is permissible for short periods of time, such as during adjustment procedures. The 4PR60A should not be operated without a heat dissipating plate connector such as the recommended Eimac HR-8.
THE BASE SHALL BE CAPABLE OF ENTERING A GAUGE 1/4" THICK HAVING 4 HOLES WHOSE DIA'S ARE 21/4" AND WHICH ARE LOCATED ON 11/16" CENTERS AND A CENTER HOLE OF .250" DIA.

*CYLINDRICAL SURFACE AVAILABLE FOR CLAMPING MUST NOT BE DEFORMED BY ACTION OF CLAMPS