

E I M A C

Division of Varian

SAN CARLOS
CALIFORNIA

KY21A

**GRID-CONTROLLED
MERCURY-VAPOR
RECTIFIER**

The EIMAC KY21A is a grid-controlled mercury vapor-rectifier incorporating features which enable it to withstand high peak inverse voltages and to conduct at relatively low applied voltages. The oxide-coated, edge-wise-wound, shielded ribbon filament, provides a large emission reserve and long life.

GENERAL CHARACTERISTICS

ELECTRICAL

Filament: Oxide-coated

Voltage	- - - - -	2.5 volts
Current	- - - - -	10 amperes
Tube Voltage Drop (approx.)	- - - - -	10 volts
Ionization Time (approx.)	- - - - -	10 μ sec
Deionization Time (approx.)	- - - - -	1000 μ sec

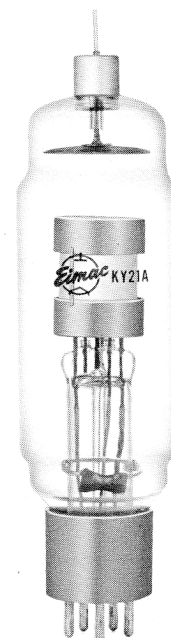
MECHANICAL

Base	- - - - -	Medium, 5-pin, #A5-11
Recommended Socket	- - - - -	E. F. Johnson #122-225
Maximum Overall Dimensions:		
Length	- - - - -	8.0 inches
Diameter	- - - - -	2 $\frac{1}{8}$ inches
Net Weight	- - - - -	4 ounces
Shipping Weight	- - - - -	3 pounds

MAXIMUM RATINGS (Single Tube)

PEAK INVERSE ANODE VOLTAGE*	- - - - -	11,000 VOLTS
PEAK ANODE CURRENT	- - - - -	3 AMPERES
AVERAGE ANODE CURRENT	- - - - -	.75 AMPERES
SUPPLY FREQUENCY	- - - - -	150 CPS
CONDENSED-MERCURY TEMPERATURE RANGE**	- - - - -	20-60° CENTIGRADE

*Temperatures in excess of 60°C limit the peak-inverse rating to 5500 volts with a corresponding reduction in permissible RMS supply voltages to one-half those listed in the table.
**Operation at 40° plus or minus 5° is recommended.



APPLICATION

MECHANICAL

Mounting — The KY21A must be mounted vertically, base down. In order to carry the ten amperes of filament current the adjacent pins have been connected in parallel within the base. Similar connections should be made in the socket.

Cooling — Provisions should be made for adequate air circulation around the tube. The temperature of the condensed mercury in the KY21A should be kept within the ranges given under "MAXIMUM RATING."

This temperature should be maintained at 40° \pm 5°C for most satisfactory operation of

the tube. To measure the condensed-mercury temperature a thermocouple or small thermometer may be attached to the glass near the tube base using a small amount of putty. A condensed-mercury temperature lower than the recommended value raises the voltage at which the tube becomes conducting and tends to reduce the life of the filament. A temperature higher than recommended lowers the voltage at which the tube becomes conducting and reduces the peak inverse voltage rating of the tube.

ELECTRICAL

Filament Voltage — For maximum tube life, the filament voltage as measured directly at

the filament pins, should be held at the rated value of 2.5 volts. Unavoidable variations in filament voltage must be kept within the range of 2.4 to 2.6 volts. A filament voltage less than the minimum recommended value may cause a high tube voltage drop, with consequent bombardment of the filament and eventual loss of emission. A filament voltage higher than the recommended maximum value will also decrease the life of the filament.

Caution should be observed in measuring the filament voltage as the filament circuit may be at a high dc potential.

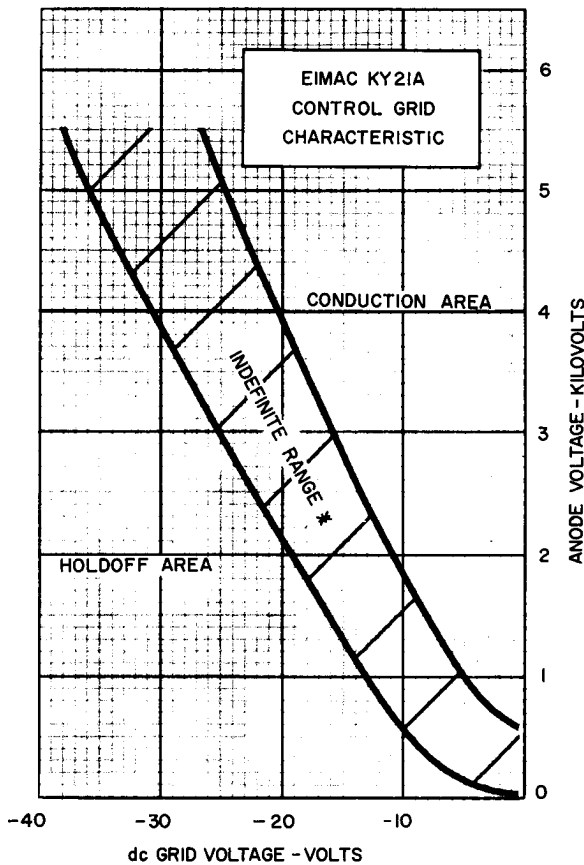
The filament of the KY21A should be allowed to reach operating temperature before the plate voltage is applied. Under normal conditions, a delay of approximately 30 seconds will be required. The delay time should be increased if there is any evidence of arc-back within the tube.

When it is necessary to use a shield around

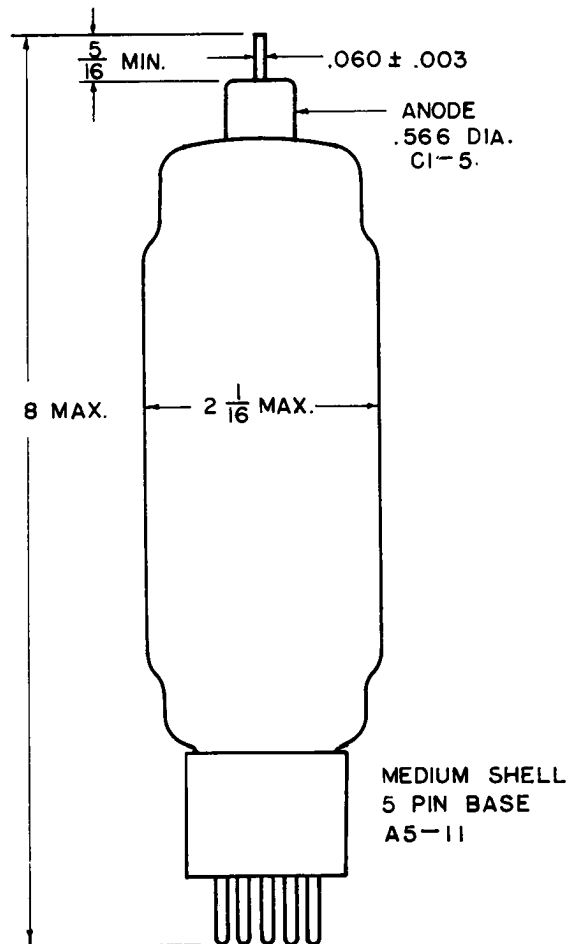
the KY21A care must be taken to insure adequate ventilation and maintenance of normal condensed-mercury temperature. When a KY21A is first installed, the filament should be operated at normal voltage for approximately ten minutes with no plate voltage applied, in order that the mercury may be properly distributed.

Shielding — Electromagnetic and electrostatic fields tend to cause the mercury vapor to break down, are detrimental to tube life and make proper operation difficult. Consequently, the KY21A should be isolated from such fields as exist around a transmitter or other similar equipment.

Grid Circuit — The KY21A is prevented from conducting by placing a negative potential on the grid. The relationship between negative grid control voltage and anode voltage is shown in the characteristic curve below.



* Depends on temperature, age and tube-to-tube variation.



NOTE: These dimensions reflect standard manufacturing tolerances. They should not be made the basis for purchase specifications unless checked with EIMAC Division of Varian.

