

# AMPEREX THYRATRON TYPE AX-5727

The AX5727 is an inert-gas filled tetrode thyatron with negative control characteristics. It is a ruggedized version of the standard type 2D21 thyatron and is designed to assure dependable life and reliable operation in relay and servo-control applications under the most exacting conditions encountered in mobile and aircraft equipment.

The tube features a high control ratio independent of temperature over a wide range, low anode-to-grid capacitance and very low grid current.

The AX5727 heater-cathode construction has been designed to give the tube a high degree of mechanical strength combined with high dependability of electrical characteristics to withstand the vigorous requirements of intermittent operation.

This tube will meet all electrical and mechanical tests prescribed in the MIL specifications.

## GENERAL CHARACTERISTICS

### ELECTRICAL DATA

Heater Voltage	6.3 volts
Heater current	0.60 ampere ←
Cathode heating time	10 seconds
Anode-to-control-grid capacitance	0.026 uuf
Control-grid to cathode and shield-grid capacitance	2.4 uuf
Deionization time, approximate	
Ebb = 125 volts d-c, Ib = 0.1 ampere d-c	
Ec <sub>1</sub> = -100 volts d-c	35 microseconds
Ec <sub>1</sub> = -11 volts d-c	75 microseconds
Ionization time, approximate	0.5 microseconds
Anode voltage drop	8 volts
Critical grid current, Ebb = 460 volts rms	0.5 microamp

### MECHANICAL DATA

Type of cooling	air
Mounting position	any
Net weight, maximum	0.3 ounce

### MAXIMUM RATINGS (absolute values)

#### GRID CONTROLLER RECTIFIER SERVICE

Maximum peak anode voltage	
Inverse	1300 volts
Forward	650 volts
Maximum cathode current	
Peak	0.5 ampere
Average	0.1 ampere
Maximum averaging time	30 seconds
Fault, maximum duration 0.1 second	10 ampers

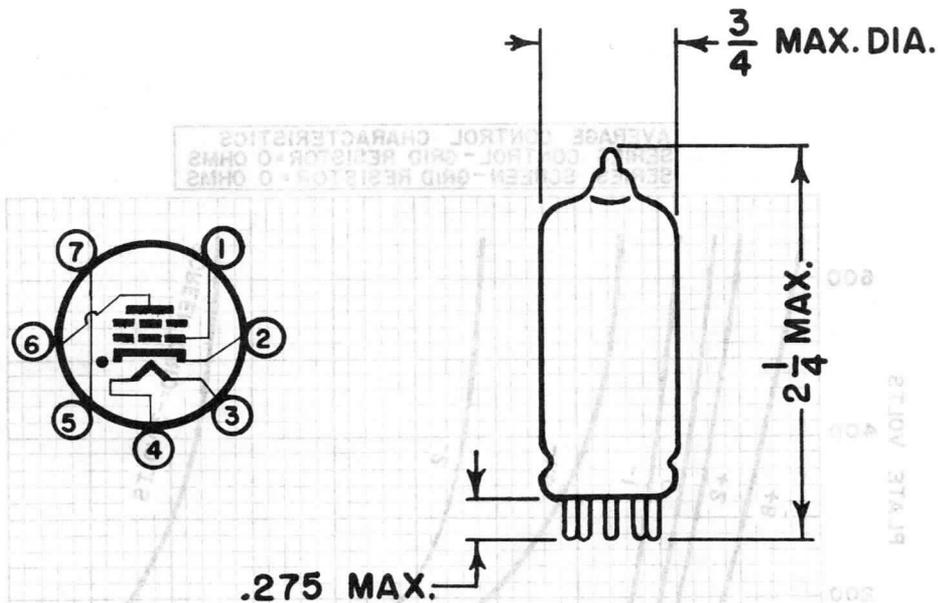
# AX-5727

Maximum negative control-grid voltage	
Before conduction	- 100 volts
During conduction	- 10 volts
Maximum positive control-grid current	
Average, (averaging time one cycle)	10 milliamperes
Maximum negative shield-grid voltage	
Before conduction	- 100 volts
During conduction	- 10 volts
Maximum positive shield-grid current	
Average, (averaging time one cycle)	10 milliamperes
Maximum heater-cathode voltage	
Heater negative	- 100 volts
Heater positive	+ 25 volts
Maximum control-grid circuit resistance	0.1 megohm
Ambient temperature limits	- 75 to + 90°C

## PULSE-MODULATOR SERVICE:

Maximum Peak Anode voltage	
Inverse	100 volts
Forward	500 volts
Maximum cathode current	
Peak	10 amperes
Average	0,01 ampere
Maximum negative control-grid voltage	
Before conduction	- 100 volts
During conduction	- 10 volts
Maximum positive control-grid current	
Peak	20 milliamperes
Maximum negative shield-grid voltage	
Before conduction	- 50 volts
During conduction	- 10 volts
Maximum positive shield-grid current	
Peak	20 milliamperes
Maximum pulse duration	5 microseconds
Maximum pulse recurrence rate	500 pulses per sec.
Maximum duty cycle	0,001
Maximum rate of change of cathode current	100 amperes per microsecond
Maximum heater-cathode voltage	0 volt
Maximum shield-grid circuit resistance	25000 ohms
Minimum shield-grid circuit resistance	2000 ohms
Maximum control-grid circuit resistance	0,5 megohm
Ambient temperature limits	- 75 to + 90°C
Maximum impact acceleration in any direction	750 g.

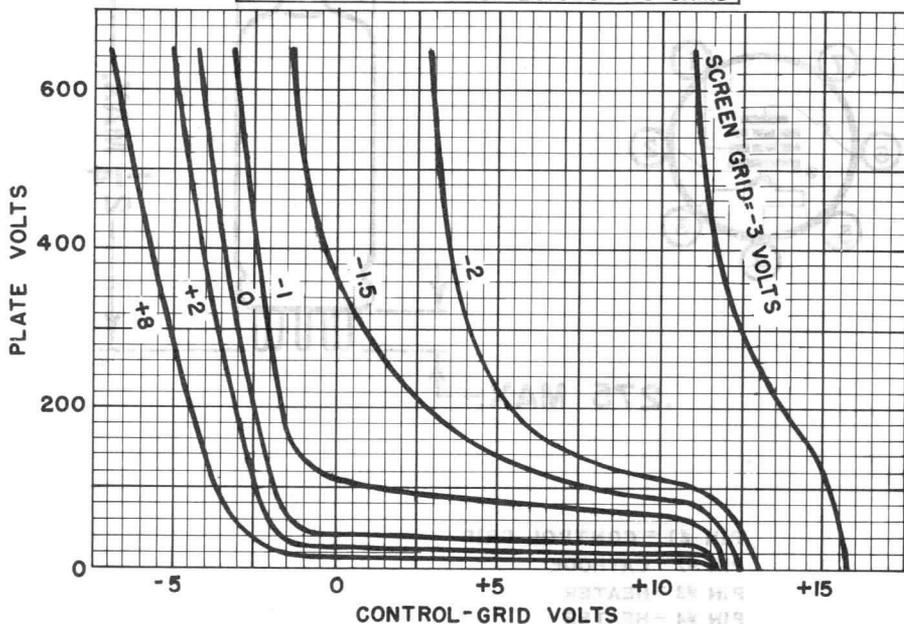
\* After the completion of a pulse, a 20-microsecond delay is required before a positive voltage of more than 10 volts is applied to the tube.



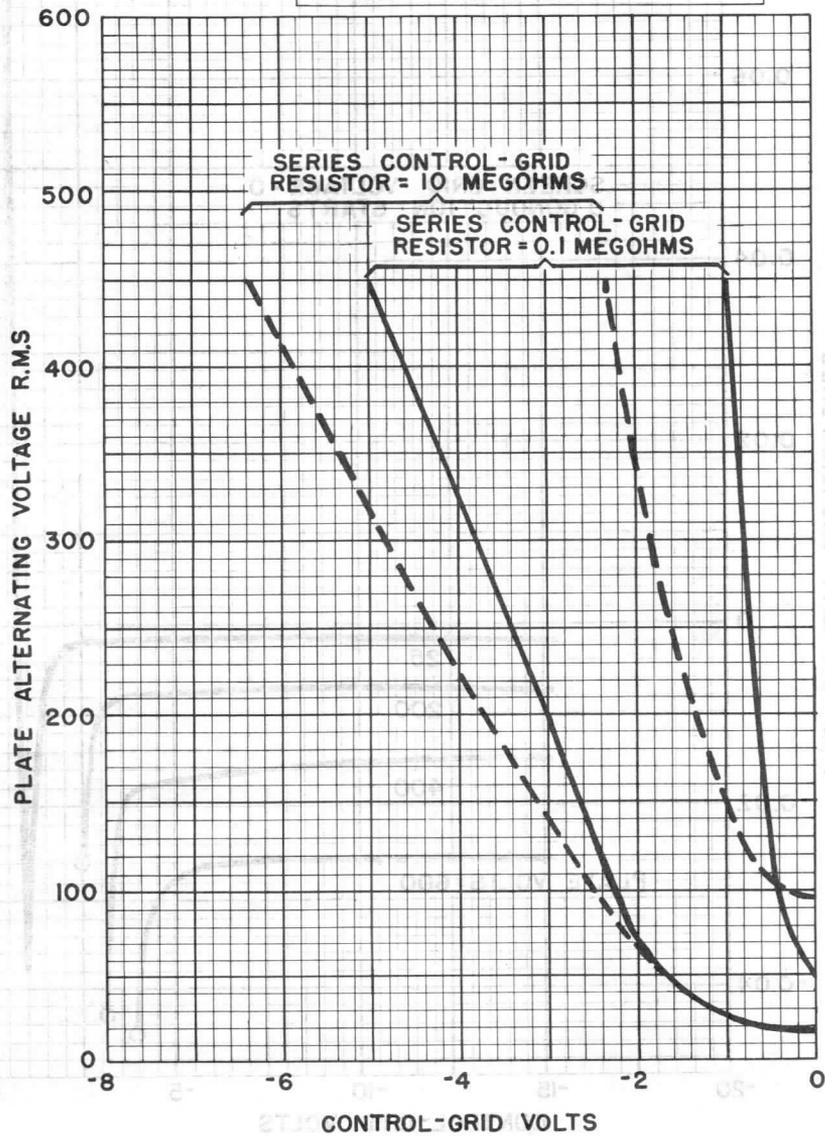
- PIN #1 = CONTROL GRID
- PIN #2 = CATHODE
- PIN #3 = HEATER
- PIN #4 = HEATER
- PIN #5 = SCREEN GRID
- PIN #6 = ANODE
- PIN #7 = SCREEN GRID

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AVERAGE CONTROL CHARACTERISTICS  
SERIES CONTROL-GRID RESISTOR = 0 OHMS  
SERIES SCREEN-GRID RESISTOR = 0 OHMS

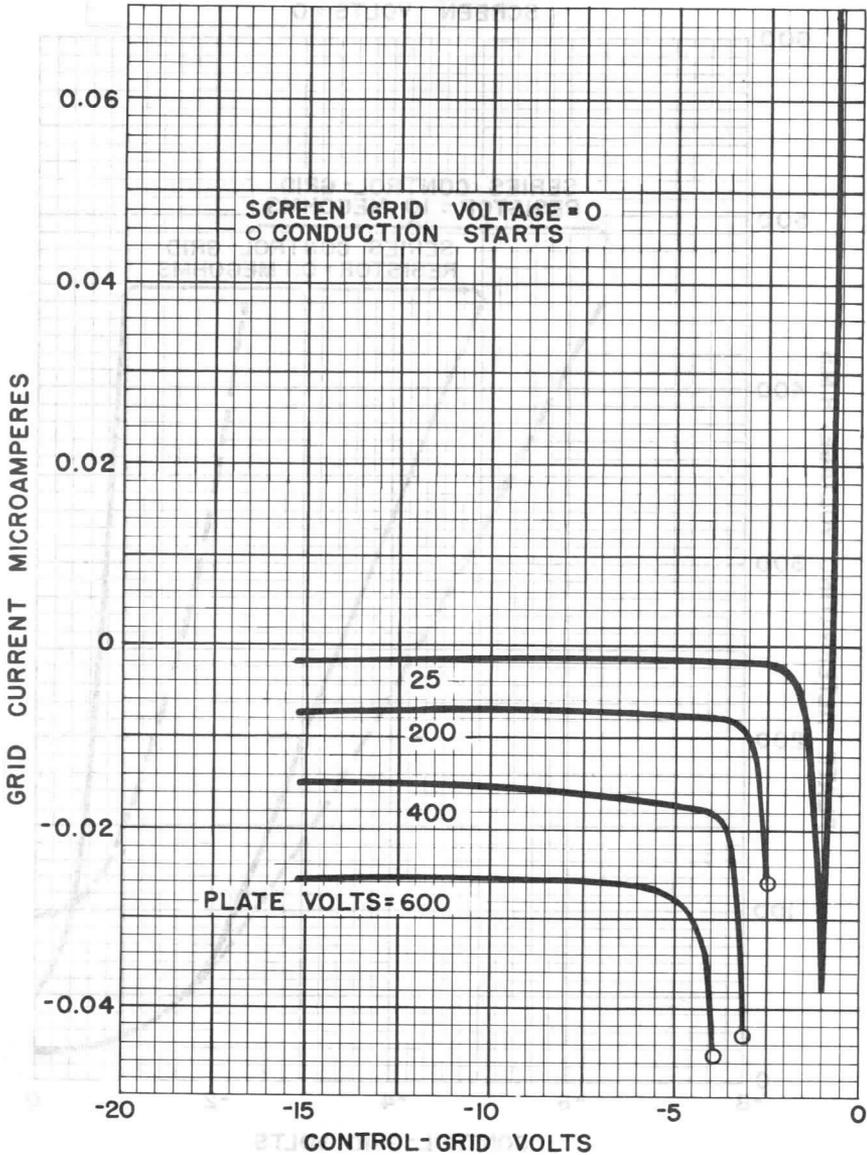


OPERATIONAL RANGE OF CRITICAL  
GRID VOLTAGE  
FILAMENT VOLTS = 5.7 TO 6.9  
SCREEN VOLTS = 0

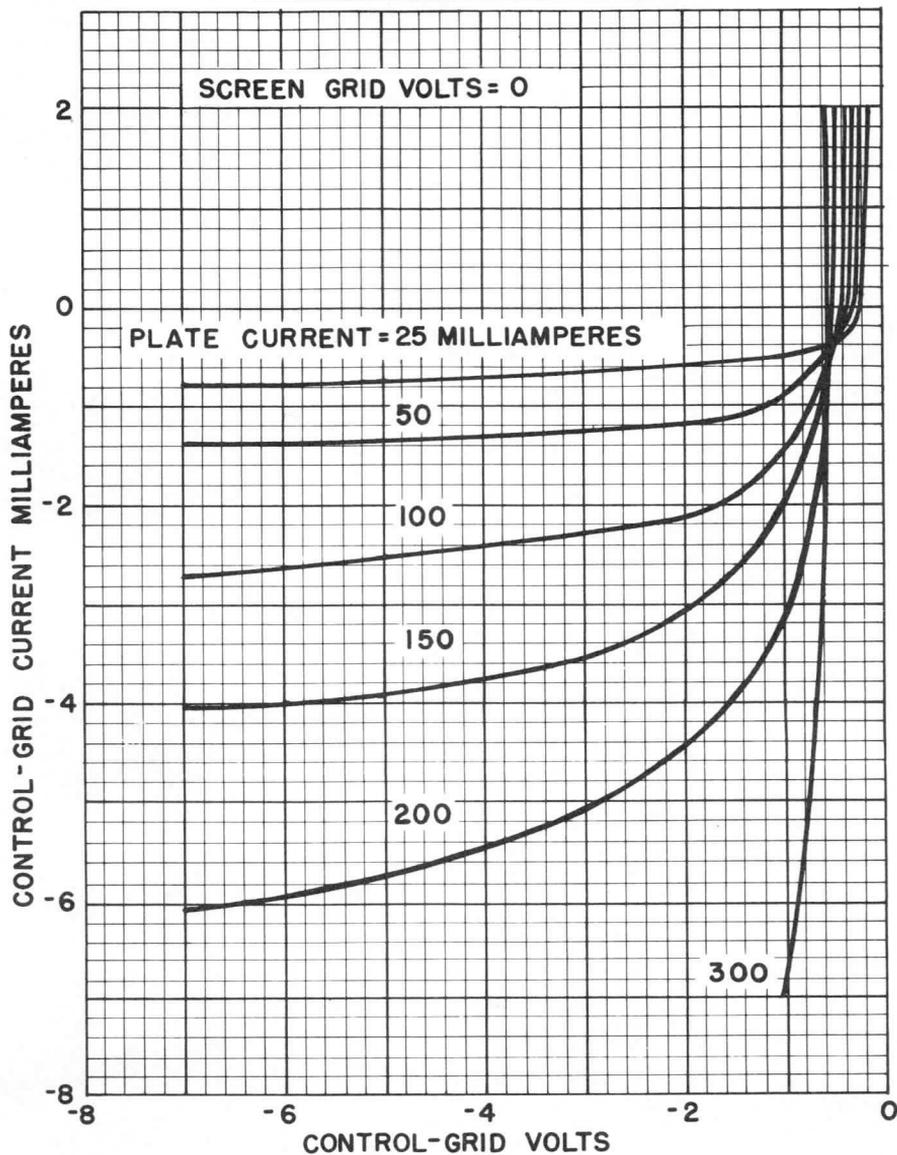


# AX-5727

AVERAGE GRID CHARACTERISTICS  
BEFORE ANODE CONDUCTION



## AVERAGE GRID CHARACTERISTICS DURING ANODE CONDUCTION



AX-2727

AVERAGE GRID CHARACTERISTICS  
DURING ANODE CONDUCTION

