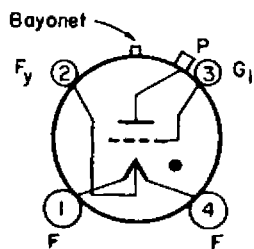
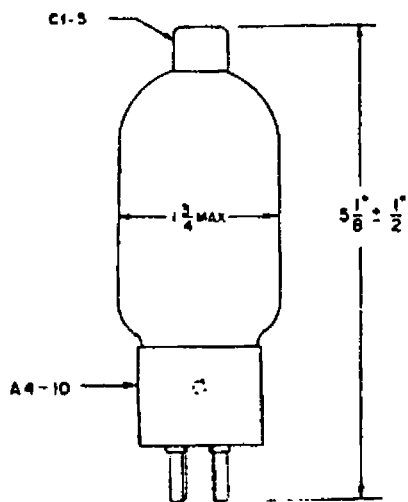


June 3, 1957

### THYRATRON TYPE WL-7031

The WL-7031 is a three-electrode, inert-gas-filled, grid-controlled thyatron with negative control characteristics. Cooling is by unrestricted air convection and characteristics remain essentially unchanged over a wide range of ambient temperatures. The WL-7031 is designed for operation in industrial control and ignitor firing service. This tube is electrically similar to the WL-5877.



JETEC  
4CF  
BASE CONNECTIONS

- F - Filament
- G<sub>1</sub> - Control Grid
- P - Plate & Anode
- F<sub>y</sub> - Filament Center Tap & Anode Return

#### GENERAL DATA

#### ELECTRICAL:

Cathode .....	Directly Heated Coated Filament
Filament:	Min. Bogey Max.
Voltage .....	2.37 2.50 2.63 Volts
Current at Filament Volts = 2.5 .....	9.8 10.8 11.8 Amperes
Heating Time .....	30 -- -- Seconds
Deionization Time .....	See Figure 2
Ionization Time .....	10 usec
Critical Anode Voltage at Grid Voltage at +6 Volts .....	-- -- 100 Volts
Critical Grid Voltage at Anode	
Voltage of 1500 Volts-See Figure 1 .....	-4.0 -9.5 -15.0 Volts
Interelectrode Capacitances (Approx.)	
Anode to Grid .....	0.51 uuf
Grid to Filament .....	15.6 uuf
Anode to Filament .....	3.4 uuf
Typical Arc Drop .....	16 Volts
Control Characteristic .....	Negative

#### MECHANICAL:

Mounting Position .....	Any
Overall Height (Approx.) .....	5-3/8"
Overall Diameter (Maximum) .....	1-3/4"
Type of Cooling .....	Air, Unrestricted Convection
Temperature Range .....	-55 to +70°C
Bulb .....	T-13
Anode Cap .....	JETEC C1-5
Base .....	JETEC A410
Net Weight (Approx.) .....	5 oz.
Shipping Weight (Approx.) .....	2 lb.

#### MAXIMUM RATINGS

#### ABSOLUTE MAXIMUM VALUES:

Peak Anode Voltage		
Forward .....	1500 max.	Volts
Inverse .....	1500 max.	Volts
Anode		
Peak .....	40 max.	Amperes
Average .....	3.2 max.	Amperes
Surge, max. Duration 0.1 sec. ■		
Connection (a) .....	560 max.	Amperes
Connection (b) .....	280 max.	Amperes
Connection (c) .....	280 max.	Amperes
Commutation Factor † .....	200 max.	va/usec
Current Rate of Change .....	0.25 max.	a/usec
Voltage Rate of Change .....	800 max.	v/usec
Negative Control Grid Voltage		
Before Conduction .....	250 max.	Volts
During Conduction ‡ .....	10 max.	Volts
Average Positive Control Grid Current		
Averaging Time = 1 cycle † .....	0.20 max.	Ampere
Operating Frequency † .....	60 max.	cps

## NOTES

**General** These ratings are important in the prevention of "clean-up" or loss of the inert gas filling. Their observance will reduce the bombardment of anode or grid by positive ions of the gas filling, which may cause the gas ions to be absorbed in the tube element concerned.

◆ Commutation factor is the product of the rate of current decay in amperes per microsecond just prior to the end of commutation and the rate of inverse voltage rise in volts per microsecond just after the end of commutation. Its value should not exceed the value given in order to reduce ion bombardment of the anode during the deionization period. Limits are given on both components of this factor to correspond to factory test data limits. The limit on current rate of change is about at the highest value which is allowable under the fault current limit.

§ When the tube conducts, positive ions are attracted to a grid at negative potential. This positive ion current flowing through the grid resistor will reduce the negative voltage at the grid from the higher negative grid supply voltage. To reduce ion grid bombardment, sufficient resistance must be provided to drop the negative grid supply voltage to a value not more negative than -10 volts as shown in the ratings.

◆ This rating indicates the heat emission properties of the grid. This value of current may be safely drawn to the grid if conduction occurs only while the anode is positive. However, during the period of negative anode potential, the grid potential must also be negative to prevent electrons being drawn to the grid and generating positive ions which would bombard the anode.

⊕ For higher frequency ratings, consult the tube manufacturer.

■ These ratings are effective only when the anode return connections are made according to the following diagrams:

Connection a

Connection b

Connection c

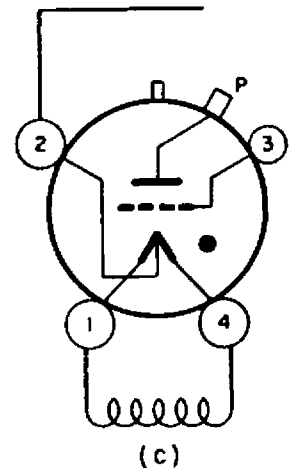
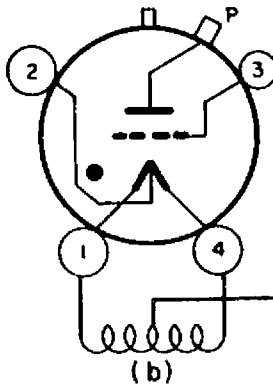
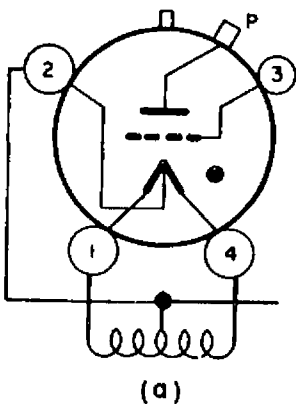


Figure 1  
CRITICAL GRID VOLTAGE OF WL-7031

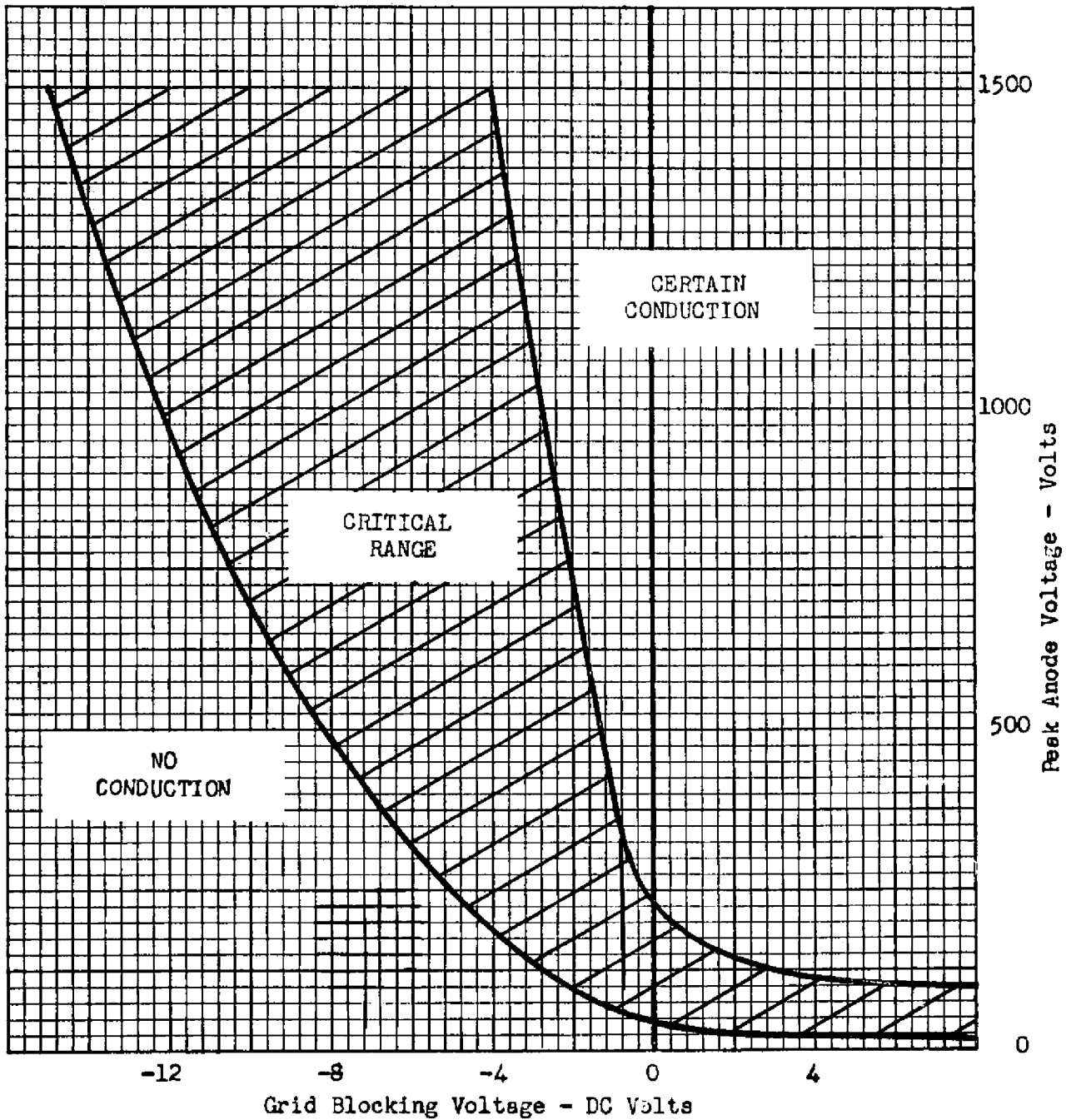


Figure 2  
WL-7031 RECOVERY TIME (TYPICAL)

