



3D22

# 3D22 THYRATRON

GAS TETRODE

## GENERAL DATA

### Electrical:

Heater, for Unipotential Cathode:	Min.	Av.	Max.	
Voltage (AC or DC) . . . . .	5.7	6.3	6.9	volts
Current, with heater volts = 6.3	2.35	2.60	2.85	amp

### Cathode:

Heating Time, prior to tube conduction . . .	30	-	-	sec
Outage Time, without reheating	-	-	3	sec

### Direct Interelectrode Capacitances (Approx.):\*

Grid No.1 to Anode . . . . .	0.1	$\mu\mu\text{f}$
Input . . . . .	7	$\mu\mu\text{f}$
Output . . . . .	3.6	$\mu\mu\text{f}$

\* Without external shield, and with base shell floating.  
Ionization Time (Approx.):

For conditions: dc anode volts = 100; grid-No.1 square-pulse volts = +100; and peak anode amp. during conduction = 8 . . . . .	0.5	$\mu\text{sec}$
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### Deionization Time (Approx.):

For conditions: dc anode volts = 125; grid-No.1 volts = -200, grid-No.1 resistor (ohms) = 1000; and dc anode amp. = 0.8 . . . . .	150	$\mu\text{sec}$
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For conditions: dc anode volts = 125, grid-No.1 volts = -14.8; grid-No.1 resistor (ohms) = 1000; and dc anode amp. = 0.8 . . . . .	400	$\mu\text{sec}$
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Maximum Critical Grid Current, with ac anode-supply volts (rms) = 460, and average anode amp. = 0.8 . . . . .

0.8	$\mu\text{amp}$
10	volts

### Anode Voltage Drop (Approx.) . . . . .

Grid-No.1 Control Ratio (Approx.) with grid-No.1 resistor (megohms) = 0 to 0.1; grid-No.2 resistor (megohms) = 0; and grid-No.2 volts = 0 . . . . .

150

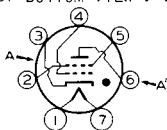
Grid-No.2 Control Ratio (Approx.) with grid-No.1 resistor (megohms) = 0; grid-No.2 resistor (megohms) = 0 to 0.1; and grid-No.1 volts = -3 . . . . .

650

### Mechanical:

Mounting Position . . . . .	Any
Maximum Overall Length . . . . .	4-5/8"
Maximum Seated Length . . . . .	4"
Maximum Diameter . . . . .	2-3/8"
Bulb . . . . .	T-16
Base . . . . .	Medium-Metal-Shell Giant 7-Pin, Bayonet
Basing Designation for BOTTOM VIEW . . . . .	7BV

- Pin 1-Heater
- Pin 2-Grid No.2
- Pin 3-Cathode
- Pin 4-Grid No.1



- Pin 5-Grid No.2
- Pin 6-Anode
- Pin 7-Heater

AA' = PLANE OF ELECTRODES

← Indicates a change.

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## RELAY and GRID-CONTROLLED RECTIFIER SERVICE

### Maximum Ratings, Absolute Values:

PEAK ANODE VOLTAGE:		
	Forward. . . . .	650 max. volts
→	Inverse. . . . .	1500 max. volts
GRID-No.2 (SHIELD-GRID) VOLTAGE:		
	Peak, before anode conduction. . . . .	-100 max. volts
→	Average, during anode conduction <sup>■</sup> . . . .	-10 max. volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
	Peak, before anode conduction. . . . .	-200 max. volts
→	Average, during anode conduction <sup>■</sup> . . . .	-10 max. volts
→	CATHODE CURRENT:	
	Peak . . . . .	8 max. amp
	Average <sup>■</sup> . . . . .	0.8 max. amp
	Surge, for duration of 0.1 sec. max. . . .	30 max. amp
GRID-No.2 CURRENT:		
→	Average <sup>■</sup> . . . . .	+0.1 max. amp
GRID-No.1 CURRENT:		
→	Average <sup>■</sup> . . . . .	+0.05 max. amp
PEAK HEATER-CATHODE VOLTAGE:		
	Heater negative with respect to cathode.	100 max. volts
	Heater positive with respect to cathode.	25 max. volts
AMBIENT TEMPERATURE RANGE. . . . . -75 to +90 °C		

### Maximum Circuit Values:

Grid-No.1-Circuit Resistance . . . . . 2 max. megohms

<sup>■</sup> Averaged over any interval of 30 sec. max.

NOTE: Sufficient anode-circuit resistance, including tube load, must be used under all conditions of operation to prevent exceeding the current ratings of the tube.

→ indicates a change.

JUNE 15, 1948

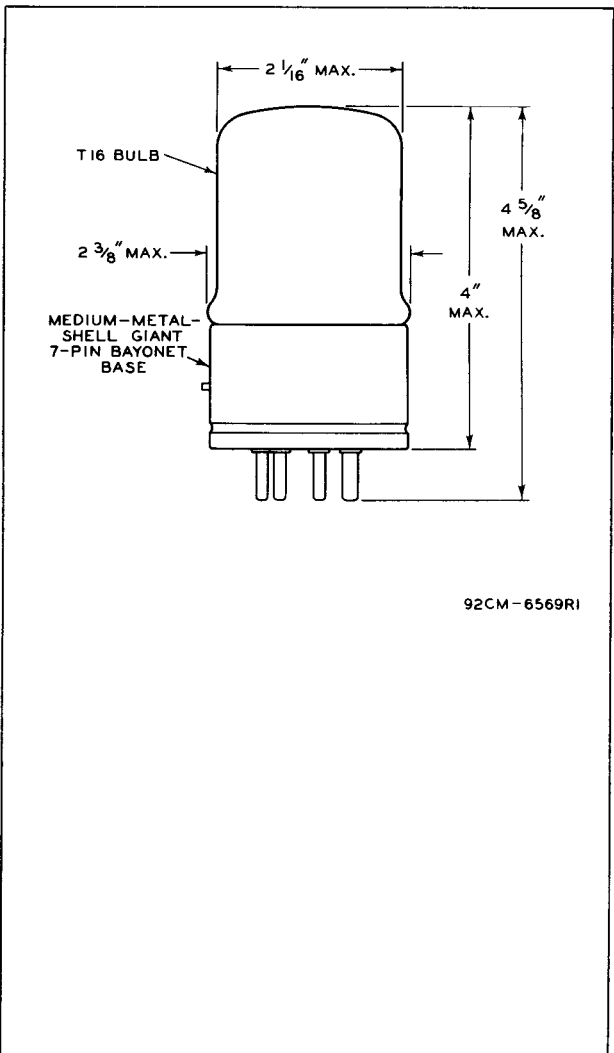
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DATA



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92CM-6569R1

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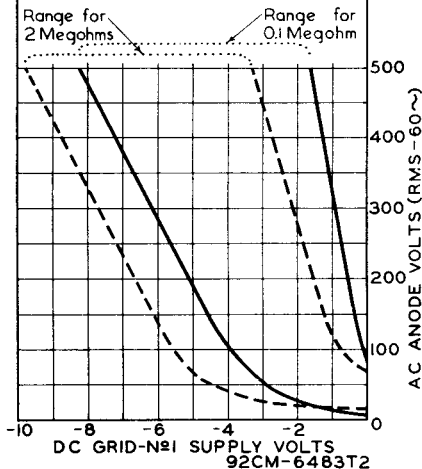
# THYRATRON

## OPERATIONAL RANGE OF CRITICAL GRID VOLTAGE

TYPE 3D22

GRID-N<sup>o</sup>2 (SHIELD) VOLTS = 0

RANGES SHOWN ARE FOR TWO VALUES OF GRID RESISTOR—0.1 MEG. AND 2 MEG.—AND TAKE INTO ACCOUNT INITIAL DIFFERENCES BETWEEN INDIVIDUAL TUBES AND SUBSEQUENT DIFFERENCES DURING TUBE LIFE, FOR HEATER-VOLTAGE RANGE OF 5.7 TO 6.9 VOLTS, AND FOR AN AMBIENT TEMPERATURE RANGE OF -40 TO +90 °C.



JUNE 15, 1948

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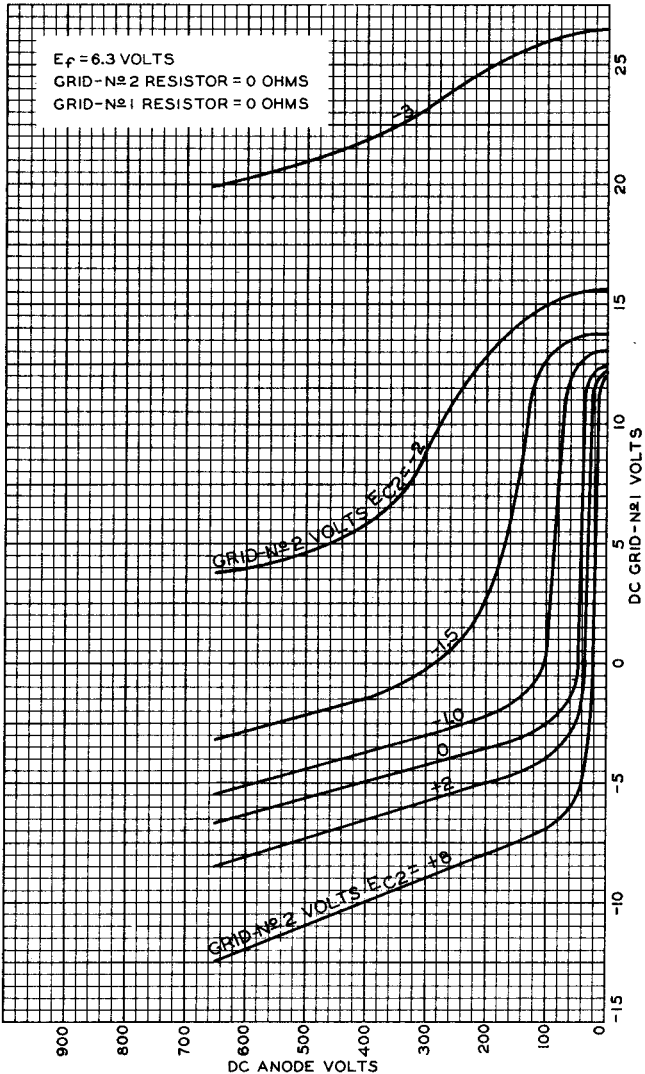
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### AVERAGE CONTROL CHARACTERISTICS



JAN. 22, 1947

TUBE DEPARTMENT

92CM-6831

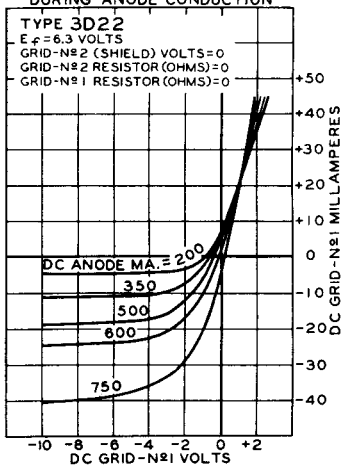
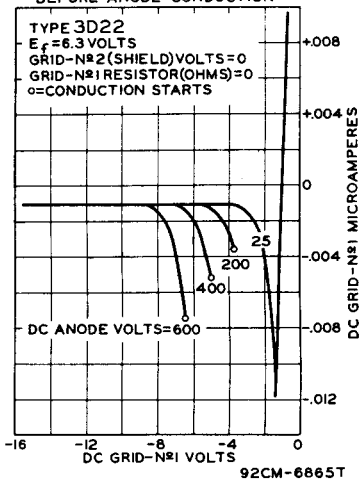
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## THYRATRON

AVERAGE GRID CHARACTERISTICS  
DURING ANODE CONDUCTIONAVERAGE GRID CHARACTERISTICS  
BEFORE ANODE CONDUCTION

APRIL 15, 1947

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