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# THYRATRON

GAS TETRODE

## GENERAL DATA

### Electrical:

Heater, for Unipotential

	Cathode:	Min.	Av.	Max.	
Voltage (AC or DC) . . . . .		5.7	6.3	5.9	volts
Current at 6.3 volts . . . . .		2.35	2.6	2.85	amp

Cathode:

Minimum Heating Time, prior to tube conduction . . . . .				30	seconds
Maximum Outage Time, without reheating . . . . .				5	seconds

Direct Interelectrode Capacitances

(Approx., without external shield):

Grid No.1 to Anode . . . . .			0.23		$\mu$ mf
Input . . . . .			5.8		$\mu$ mf
Output . . . . .			3.9		$\mu$ mf

Maximum Critical Grid-No.1 Current with  
ac anode-supply volts (rms) = 460,  
and average anode current = 0.5 amp . . . . .

3  $\mu$ amp

Anode Voltage Drop (Approx.) . . . . . 10 volts

Grid-No.1 Control Ratio (Approx.) with

grid-No.1 resistor (megohms) = 0;

grid-No.2 resistor (megohms) = 0;

and dc 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;

and dc grid-No.1 volts = 0 . . . . . 650

### Mechanical:

Mounting Position . . . . . Any

Maximum Overall Length . . . . . 4-1/4"

Maximum Seated Length . . . . . 3-11/16"

Maximum Diameter . . . . . 1-23/32"

Bulb . . . . . T-12

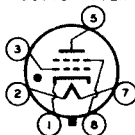
Base . . . . . Short Jumbo-Shell Octal 6-Pin (JETEC No. B6-73)

### BOTTOM VIEW

Pin 1 - Cathode

Pin 2 - Heater

Pin 3 - Grid No.1



Pin 5 - Anode

Pin 7 - Heater

Pin 8 - Grid No.2

### RELAY AND GRID-CONTROLLED RECTIFIER SERVICE

For Anode-Supply Frequency of 60 cps

### Maximum Ratings, Absolute Values:

PEAK ANODE VOLTAGE:

Forward . . . . . 650 max. volts

Inverse . . . . . 1300 max. volts

JULY 1, 1952

TUBE DEPARTMENT

TENTATIVE DATA

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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## THYRATRON

### GRID-No.2 (SHIELD-GRID) VOLTAGE:

Peak, before anode conduction . . . . . -100 max. volts  
 Average\*, during anode conduction . . . -10 max. volts

### GRID-No.1 (CONTROL-GRID) VOLTAGE:

Peak, before anode conduction . . . . . -200 max. volts  
 Average\*, during anode conduction . . . -10 max. volts

### CATHODE CURRENT:

Peak . . . . . 5 max. amp  
 Average\* . . . . . 0.5 max. amp  
 Fault, for duration of 0.1 sec. max. . . 20 max. amp

### GRID-No.2 CURRENT:

Average\* . . . . . 0.05 max. amp

### GRID-No.1 CURRENT:

Average\* . . . . . 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

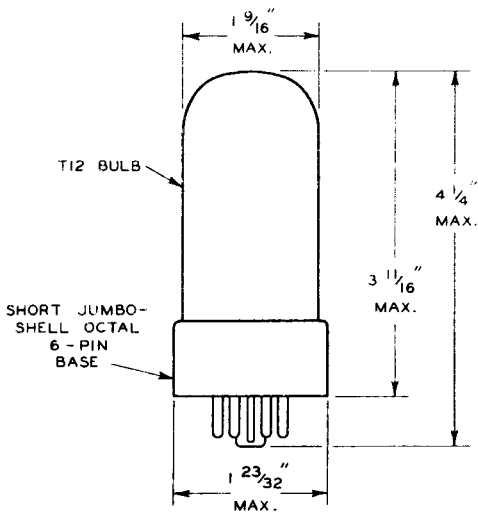
\* Averaged over any interval of 30 seconds maximum.



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# THYRATRON



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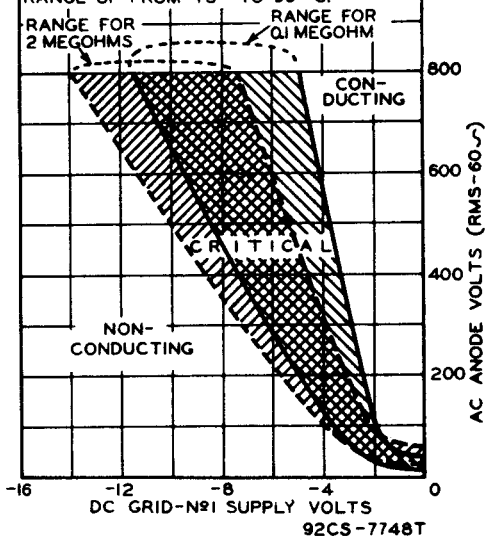


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# THYRATRON

## OPERATIONAL RANGE OF CRITICAL GRID VOLTAGE

TYPE 6012 GRID-N<sup>o</sup>2 (SHIELD) VOLTS=0  
 RANGES SHOWN ARE FOR TWO VALUES  
 OF GRID-N<sup>o</sup>1 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 FROM -75° TO 90° C.



JULY 1, 1952

TUBE DEPARTMENT  
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

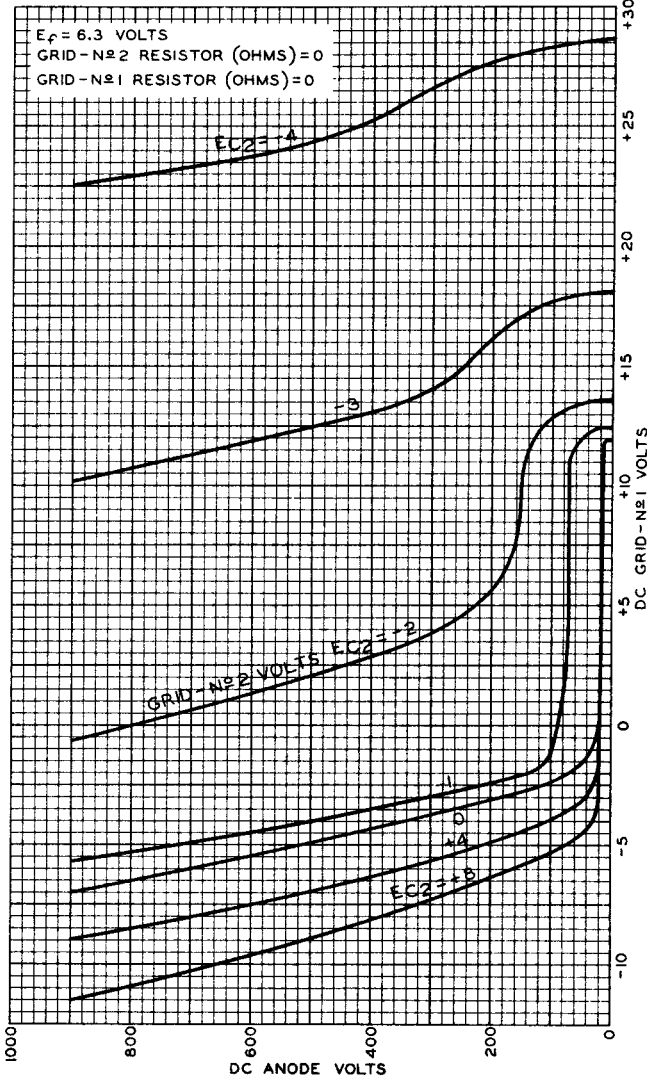
CE-7748T



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### AVERAGE CONTROL CHARACTERISTICS



FEB. 4, 1952

TUBE DEPARTMENT  
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7747

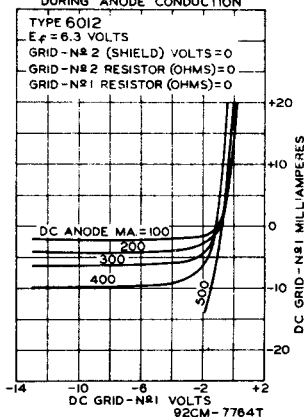
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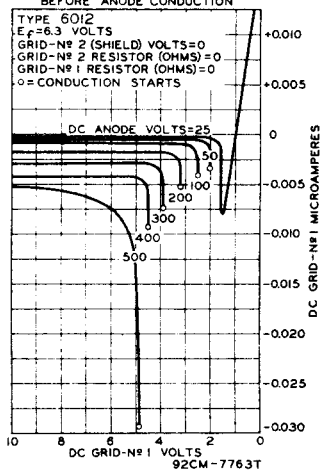
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# THYRATRON

## AVERAGE GRID CHARACTERISTICS DURING ANODE CONDUCTION



## AVERAGE GRID CHARACTERISTICS BEFORE ANODE CONDUCTION



JULY 1, 1952

TUBE DEPARTMENT  
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

CE-7764T-7763T



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# GAS THYRATRON

NEGATIVE-CONTROL TETRODE TYPE

## GENERAL DATA

### Electrical:

Heater, for Unipotential Cathode:

	Min.	Av.	Max.	
Voltage . . . . .	5.7	6.3	6.9	ac or dc volts
Current at 6.3 volts . . . . .	-	2.6	2.85	amp

Cathode:

Minimum heating time prior to tube conduction . . . . .	30	sec
Maximum outage time without reheating . . . . .	5	sec

Direct Interelectrode Capacitances

(Approx.):<sup>o</sup>

Grid No.1 to anode . . . . .	0.23	$\mu\mu\text{f}$
Grid No.1 to cathode, grid No.2, and heater . . . . .	5.8	$\mu\mu\text{f}$
Anode to cathode, grid No.2, and heater . . . . .	3.9	$\mu\mu\text{f}$

Ionization Time (Approx.):

For conditions: dc anode volts = 100, grid-No.2 volts = 0, grid-No.1 square-pulse volts = +50, and peak anode amperes during conduction = 5 . . . . .	0.5	$\mu\text{sec}$
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Deionization Time (Approx.) . . . . .

See Table I ←

Maximum Critical Grid-No.1 Current:

For conditions: ac anode-supply volts = 460 (rms), and average anode amperes = 0.5 . . . . .	3	$\mu\text{amp}$
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Anode Voltage Drop (Approx.) . . . . .

10 volts

Grid-No.1 Control Ratio (Approx.):

For conditions: grid-No.1 resistor (megohms) = 0, grid-No.2 resistor (megohms) = 0, and grid-No.2 volts = 0 . . . . .	150	
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Grid-No.2 Control Ratio (Approx.):

For conditions: grid-No.1 resistor (megohms) = 0, grid-No.2 resistor (megohms) = 0, and grid-No.1 volts = 0 . . . . .	650	
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### Mechanical:

Mounting Position . . . . .	Any
Maximum Overall Length . . . . .	3-7/8" ←
Maximum Seated Length . . . . .	3-5/16" ←
Maximum Diameter . . . . .	1-23/32" ←
Bulb . . . . .	T-12 ←
Base . . . . .	Large-Wafer Octal 6-Pin ←
with External Barriers and Sleeve (JETEC No.B6-100)	

<sup>o</sup> Without external shield.

← Indicates a change.



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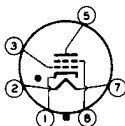
## GAS THYRATRON

Basing Designation for BOTTOM VIEW . . . . . 6C0

Pin 1 - Cathode

Pin 2 - Heater

Pin 3 - Grid No.1



Pin 5 - Anode

Pin 7 - Heater

Pin 8 - Grid No.2

## RELAY AND GRID-CONTROLLED RECTIFIER SERVICE

*For anode-supply frequency of 60 cps*

## Maximum Ratings, Absolute Values:

## PEAK ANODE VOLTAGE:

Forward. . . . .	650 max.	volts
Inverse. . . . .	1300 max.	volts

## GRID-No.2 (SHIELD-GRID) VOLTAGE:

Peak, before tube conduction . . . . .	-100 max.	volts
Average <sup>#</sup> , during tube conduction . . . . .	-10 max.	volts

## GRID-No.1 (CONTROL-GRID) VOLTAGE:

Peak, before tube conduction . . . . .	-200 max.	volts
Average <sup>#</sup> , during tube conduction . . . . .	-10 max.	volts

## CATHODE CURRENT:

Peak . . . . .	5 max.	amp
Average <sup>#</sup> . . . . .	0.5 max.	amp
Fault, for duration of 0.1 second max. . . . .	20 max.	amp

AVERAGE GRID-No.2 CURRENT<sup>#</sup> . . . . . +0.05 max. amp

AVERAGE GRID-No.1 CURRENT<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 seconds maximum.

→ Indicates a change.





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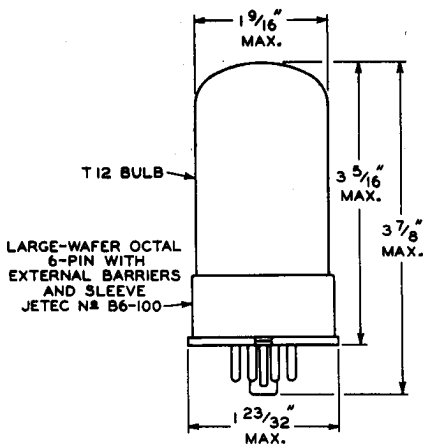
## GAS THYRATRON

TABLE I

$E_{cc1}$  = DC Grid-No.1 Supply Voltage (Volts)  
 $E_{cc2}$  = DC Grid-No.2 Supply Voltage (Volts)  
 $R_{g1}$  = Grid-No.1 Resistor (Megohms)  
 $R_{g2}$  = Grid-No.2 Resistor (Ohms)

DC Anode Volts	125		250		$R_{g1}$	$E_{cc1}$	$R_{g2}^*$	$E_{cc2}$
	0.5	1.0	0.5	1.0				
DEIONIZATION TIME	175	225	250	275	0.001	-13	1000	0
	350	375	450	475	0.1			
	650	700	1100	1200	2			
TIME (Approx.)	100	125	100	125	0.001	-100	1000	0
	125	150	150	175	0.1			
	250	275	275	300	2			

\* Series resistor between grid No.2 and cathode.



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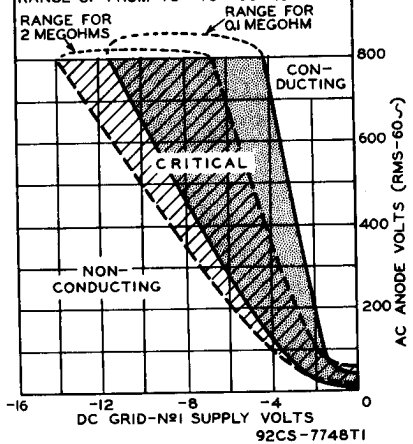


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# GAS THYRATRON

## OPERATIONAL RANGE OF CRITICAL GRID-N<sup>o</sup>1 VOLTAGE

GRID-N<sup>o</sup>2 (SHIELD) VOLTS=0  
 RANGES SHOWN ARE FOR TWO VALUES OF GRID-N<sup>o</sup>1 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 FROM -75° TO +90° C.

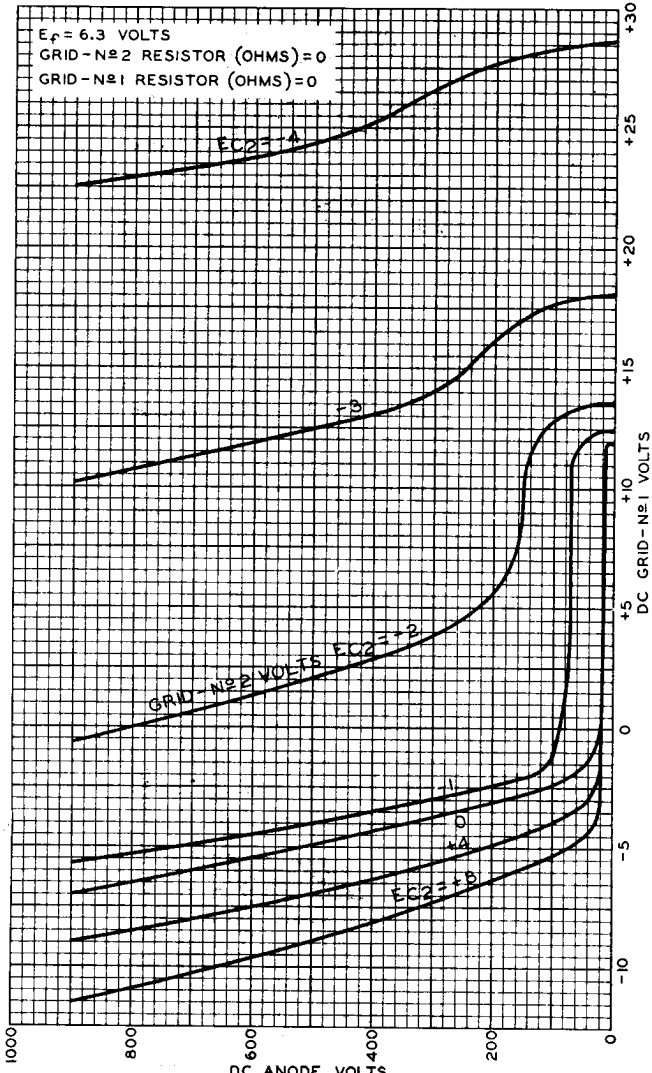




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### AVERAGE CONTROL CHARACTERISTICS

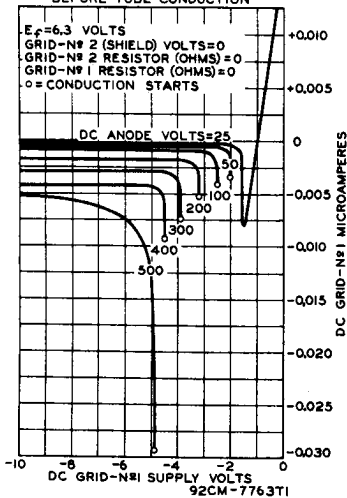




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## CHARACTERISTIC CURVES

AVERAGE GRID-N#1  
CHARACTERISTICS  
BEFORE TUBE CONDUCTION



AVERAGE GRID-N#1  
CHARACTERISTICS  
DURING TUBE CONDUCTION

