

GL-7736  
IGNITRON

RECTIFIER SERVICE - 400 AMPERES  
AC CONTROL SERVICE - 4800 KILOVOLT-AMPERES

AUXILIARY ANODE  
TWO IGNITORS

GENERAL

Electrical

Cathode-Excitation - Cyclic	
Cathode Spot Starting - Ignitor	
Number of Electrodes	
Main Anodes.....	1
Main Cathodes.....	1
Auxiliary Anodes.....	1
Ignitors.....	2
Control Grids.....	1
Arc Drop at 1200 Peak Amperes.....	18.2 $\pm$ 0.1 Volts
Arc Drop at 8000 Peak Amperes.....	35 $\pm$ 0.1 Volts

Mechanical

Envelope Material - Stainless Steel	
Net Weight, approximate.....	90 pounds

Thermal

Type of Cooling - Water	
Inlet Water Temperature*, minimum.....	35 C
Outlet Water Temperature, maximum	
Power-Rectifier Service	
Peak Inverse Anode Voltage=900 Volts.....	60 C
Peak Inverse Anode Voltage=2100 Volts.....	50 C
AC Control Service	
Voltage=250 Volts RMS.....	45 C
Voltage=600 Volts RMS.....	45 C
Voltage=2400 Volts RMS.....	45 C

Water Flow, minimum

At No Load.....	2 Gallons per Minute
At Continuous Rated Average Current.....	6 Gallons per Minute

Characteristics for Water Cooling at Rated Minimum Flow

Water Temperature Rise, maximum.....	19 C
Pressure Drop at 6 Gallons per Minute, maximum.....	1 Pound per Square Inch

MAXIMUM RATINGS AND TYPICAL OPERATION

Power-Rectifier Service, Continuous Duty  
(Ratings are for Zero-Phase-Control Angle)

Maximum Peak Anode Voltage	
Inverse.....	900                      2100 Volts
Forward.....	900                        2100 Volts
Maximum Anode Current	
Peak.....	3600                      2400 Amperes

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GENERAL ELECTRIC COMPANY  
Power Tube Department  
Schenectady 5, New York

MAXIMUM RATINGS AND TYPICAL OPERATION (Cont'd.)

Average		
Continuous.....	400	300 Amperes
Two-Hours- Averaged Over Any Two-Minute Interval....	600	450 Amperes
One-Minute - Averaged Over Any One-Minute Interval..	800	600 Amperes
Fault.....	15,000	15,000 Amperes
Maximum Duration of Fault Current.....	0.15	0.15 Seconds
Frequency Range.....	25-60	25-60 Cycles per Second
Grid Requirements+		
Minimum Voltage to Establish Conduction.....		50 Volts
Minimum Voltage to Prevent Conduction.....		100 Volts
Positive Current to Establish Conduction.....		0.1 Amperes
AC Control Service † (Two Tubes in Inverse Parallel, Ratings per Tube)		
Voltage.....		2400 Volts RMS
Maximum Demand.....		4800 Kilovolt- Amperes
Average Current at Maximum Demand.....		270 Amperes
Maximum Average Current.....		414 Amperes
Demand at Maximum Average Current.....		2210 Kilovolt- Amperes
Maximum Average Time.....		1.66 Seconds
Maximum Peak Fault Current.....		12,000 Amperes
Frequency Range.....		25-60 Cycles per Second
Cathode Excitation Requirements		
Ignitor Voltage Required to Fire.....		450 Volts
Ignitor Current Required to Fire.....		45 Amperes
Starting Time at Required Voltage or Current.....		100 Microseconds
Peak Excitation Arc Current Required, minimum.....		6 Amperes
Excitation Arc-Drop Voltage.....		12 Volts
Ignitor		
Maximum Voltage		
Positive - Anode Voltage		
Negative.....		5 Volts
Maximum Current		
Peak.....		100 Amperes
Root Mean Square.....		15 Amperes
Average.....		2 Amperes
Maximum Averaging Time.....		10 Seconds
Typical Resistance Added to Ignitor Circuit for Anode Firing		

<u>Anode Voltage</u>	<u>Resistance</u>
600 Volts or less	4 Ohms
601 - 1000 Volts	10 Ohms
1001 - 1500 Volts	20 Ohms
1501 - 2000 Volts	35 Ohms
2001 - 2400 Volts	50 Ohms

## MAXIMUM RATINGS AND TYPICAL OPERATION (Cont'd.)

## Auxiliary-Anode

Maximum Peak Forward Voltage.....	160 Volts
Maximum Peak Inverse Voltage	
Main Anode Conducting.....	25 Volts
Main Anode Not Conducting.....	160 Volts
Maximum Current	
Peak.....	30 Amperes
Average.....	9 Amperes
Maximum Averaging Time.....	10 Seconds
Root Mean Square.....	15 Seconds

## Grid+

Maximum Peak Forward Voltage.....	250 Volts
Maximum Peak Inverse Voltage.....	300 Volts
Maximum Grid-Current	
Peak Positive.....	1.5 Amperes
Peak Negative.....	0.5 Amperes
Average.....	0.5 Amperes
Root Mean Square.....	1.0 Amperes

\* Dependent upon load conditions. For substantially constant load 0 C is satisfactory. For widely fluctuating loads 25 C is required.

+ At main anode voltages of 500 volts and over, the grid circuit should provide a negative d-c bias of 100 volts and a suitable turn-on voltage to swing the grid positive at the time the ignitor is fired. At lower anode voltages, it is sufficient to connect the grid to the main anode through a resistor. In either case, the grid circuit resistance should be 500 to 1000 ohms.

‡ RMS demand voltage, current, and kilovolt-ampere demand are all on the basis of full-cycle conduction (no phase delay) regardless of whether or not phase control is used. For voltages below the minimum, the minimum-voltage current rating applies. With the use of log-log paper straight-line interpolation between tabulated points may be used for other detailed ratings of: Demand kva vs average anode current, and maximum averaging time vs anode voltage.

