GL-8326

HYDROGEN THYRATRON

33 KILOVOLTS PEAK
100 KILOWATTS AVERAGE POWER

CERAMIC ENVELOPE
EXTERNAL ELECTRODES

The GL-8326 is a hydrogen thyratron for radar-modulating and other pulsing applications. It is capable of switching an average power of 100 kilowatts.

Mechanically, the tube features a heavy-duty ceramic envelope and external electrodes to improve heat dissipation.

The high peak power rating of this tube and its mechanical design features assure reliable service under the stringent operating conditions encountered in high-power pulse equipment.

Electrical

	Minimum	Bogey	Maximum	
Cathode—Indirectly Heated				
Cathode is Tied to Heater Midpoint				
Heater Voltage	6.0	6.3	6.6	Volts
Heater Current, Ef = 6.3 volts	35	—	55	Amperes
Reservoir				
Heater Voltage	3.5	4.5	5.5	Volts
Heater Current	—	—	24	Amperes
Heating Time	15	—	—	Minutes
Direct Interelectrode Capacitances				
Anode to Grid	—	40	—	μμf
Grid to Cathode	—	40	—	μμf
Anode Current Time Jitter	—	0.005	0.01	Microseconds
Anode Delay Time*	—	—	1	Microcesond
Delay Time Drift†	—	—	0.1	Microsecond
Anode Voltage Drop	—	—	400	Volts
Grid Drive‡				

Mechanical

Mounting Position—Vertical with Base Down		
Altitude, maximum	10,000	Feet
Net Weight, approximate	15	Pounds

Thermal

Ambient Temperature Limits	—55 to +75	C
Type of Cooling—Forced Air		
Air Flow Rate, at 40 C Inlet Temperature	160	Cubic Feet Per Minute
Velocity, minimum	2000	Feet per Minute

At higher inlet temperatures increased air flow may be required.

MAXIMUM RATINGS—ABSOLUTE VALUES

Maximum Peak Anode Voltage		
Inverse (See OPERATING NOTES, Electrical)		
Forward, minimum supply voltage = 3500 volts d-c	33,000	Volts
Maximum Cathode Current		
Peak	4000	Amperes
Average	7.0	Amperes
Maximum Averaging Time	1	Cycle
RMS¶	100	Amperes
Anode Dissipation Factor§	55 x 10^9	
Maximum Negative Control-Grid Voltage before Conduction	650	Volts
Maximum Rate of Rise of Anode Current	10,000	Amperes per Microsecond

* The time interval between the point on the rising portion of the grid pulse which is 26 percent of the peak unloaded pulse amplitude and the start of the anode current pulse.

† Change in anode delay time relative to the delay time observed after two minutes of operation.

‡ Driver pulse measured at the tube socket with thyratron grid disconnected; amplitude = 1300 volts minimum, 2500 volts maximum, above 0; time of rise = 0.35 microsecond maximum, measured from 26 percent to 70 percent of peak value; grid pulse duration = 2 microseconds minimum, measured between 70 percent of peak on rising side to 70 percent of peak on falling side; impedance of drive circuit = 10 to 25 ohms.

¶ The RMS current of hydrogen thyratrons is the square root of the product of the average and peak currents.

§ Highest rating to which tube has been tested. This is not necessarily maximum tube capability.

GENERAL ELECTRIC

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OPERATING NOTES

Thermal

The optimum reservoir voltage for operation under artificial-cooling conditions at maximum tube voltage, maximum peak and average tube currents, and at a repetition corresponding to an anode dissipation factor of 50 x 10^9 is inscribed on the base of the tube and must be held within ±5 percent. Applications involving operation at other conditions may necessitate a redetermination of the optimum reservoir range.

Electrical

In switching and line-type modulator circuits the minimum inverse anode voltage permissible is 5 percent of the peak forward voltage, and the maximum is 5000 volts during the first 25 microseconds following the anode pulse, exclusive of a spike of 0.05 microsecond maximum duration.

If the forward anode voltage is applied instantaneously, it should be limited to a maximum of 22 kilovolts peak. The power-supply filter should be designed to limit the rate of application of this voltage to 550,000 volts per second.

X-RAY WARNING NOTICE

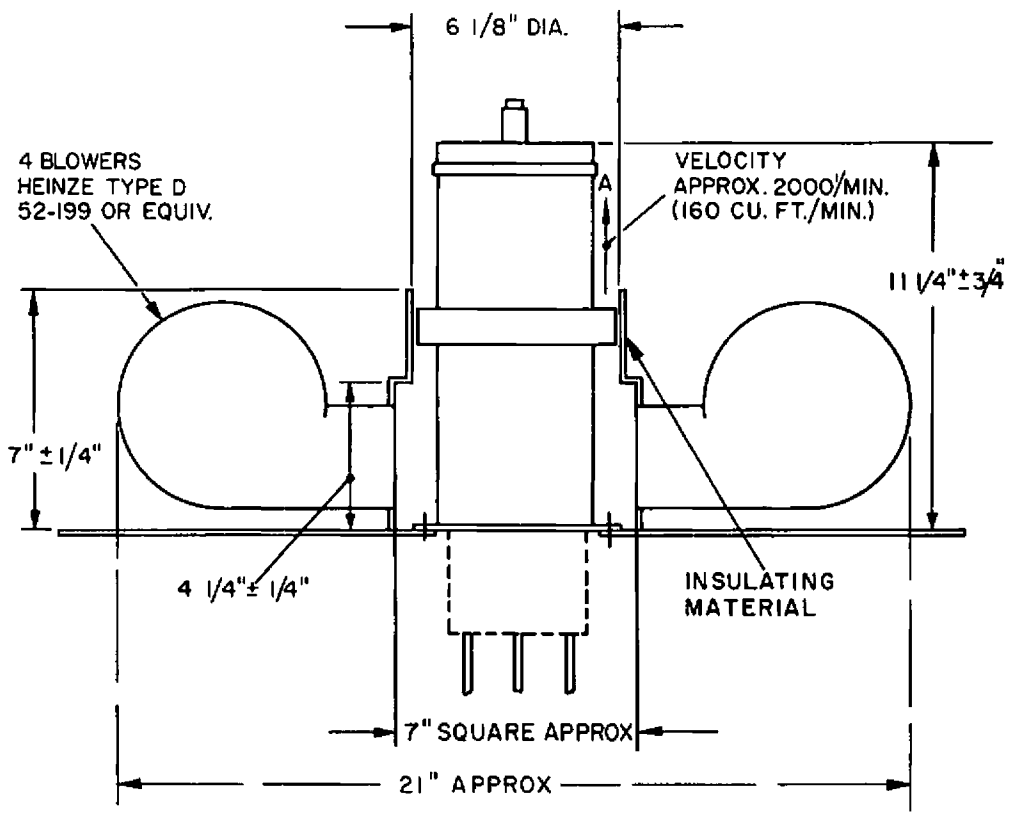
If the GL-8326 is operated at anode voltages in excess of 16 kilovolts, X-ray radiation shielding may be necessary to protect the user against possible danger of personal injury from prolonged exposure at close range. For further information consult the following references or other standard texts on the subject:

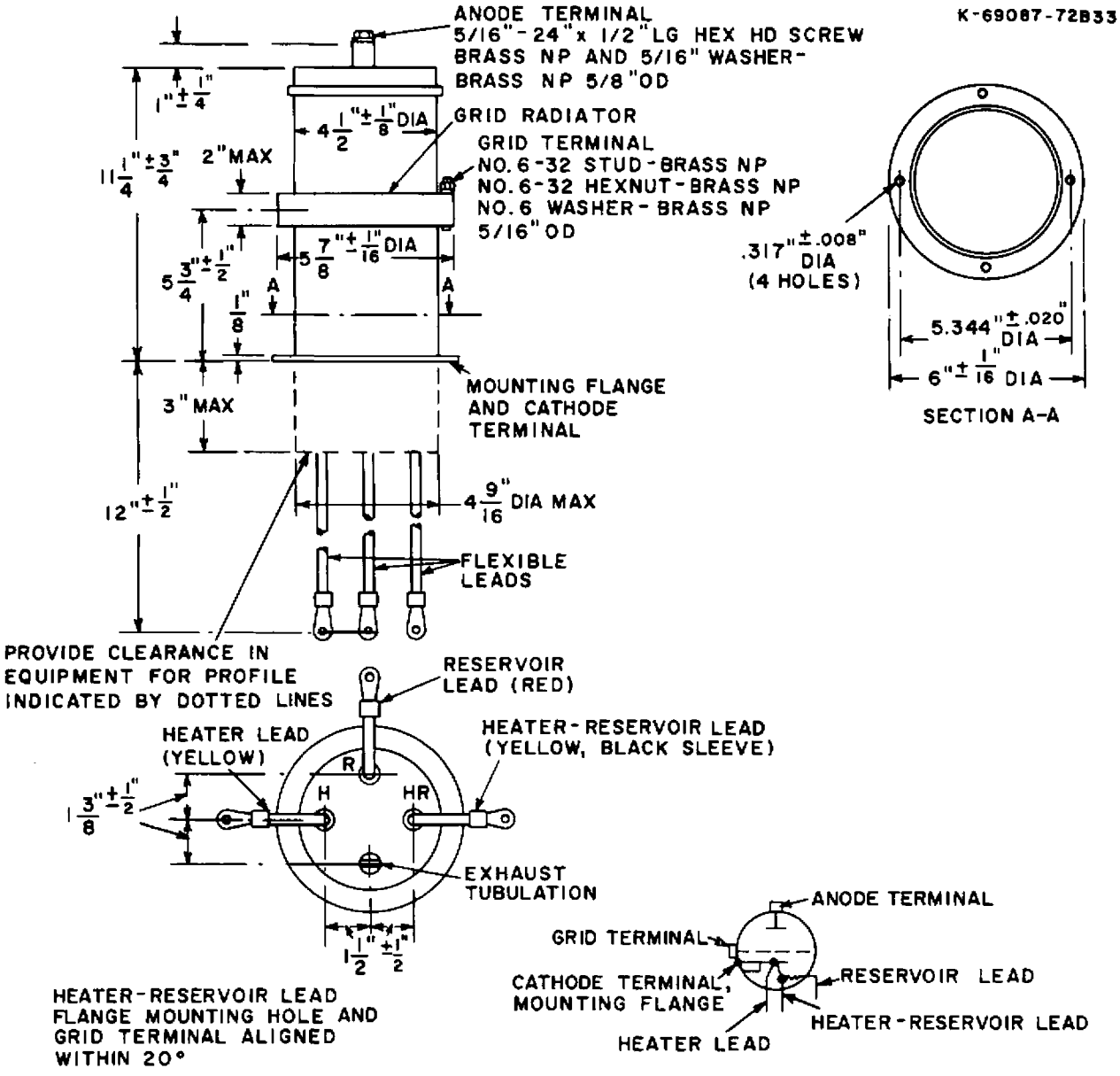
(a) X-RAY PROTECTION DESIGN, Handbook No. 50. National Bureau of Standards, Washington, D. C.

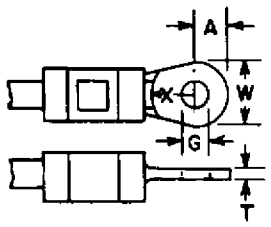
(b) X-RAY PROTECTION, Handbook No. 60. National Bureau of Standards, Washington, D. C.
The above references are available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

(c) SAFETY CODE FOR THE INDUSTRIAL USE OF X-RAYS, Bulletin No. Z54-1. American Standards Association, New York 17, N. Y.

(d) Schneider, S. and Reich, B., "X-Ray Emission from High-Voltage Hydrogen Thyratrons," PROC. IRE, Vol. 43, No. 6, June, 1955.







PRESSURE-TYPE LUGS WITH INSULATING SLEEVES

LEADS	LUG DESIGNATION	"G" INCHES	"W" INCHES	"A" INCHES	"X" INCHES	"T" INCHES
RESERVOIR	NO. 10	.187 TO .207	.395 MAX	.200 MAX	.275 MIN	.060 MAX
HEATER-RESERVOIR	1/4"	.260 TO .313	.605 MAX	.305 MAX	.380 MIN	.060 MAX
HEATER	1/4"	.260 TO .313	.605 MAX	.305 MAX	.380 MIN	.060 MAX

NOTE: THERE SHALL BE NO OBSTRUCTION WITHIN THE DISTANCE OF "X" FROM THE CENTER OF THE LUG SCREWHOLE