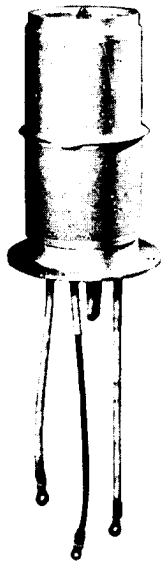


GL-7390

HYDROGEN THYRATRON

40 KILOVOLTS PEAK
33 MEGAWATTS AT 60 KILOWATTS

CERAMIC ENVELOPE
EXTERNAL ELECTRODES

The GL-7390 is a hydrogen thyratron for radar modulating and other pulsing applications. It will carry high peak currents and withstands very high voltages.

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

The high-peak-power ratings 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	27	32	35	Amperes
Reservoir				
Heater Voltage*	3.5	4.5	5.5	Volts
Heater Current				
E_{res} = 4.5 volts	8	9	10	Amperes
E_{res} = 5.5 volts	—	—	12	Amperes
Cathode and Reservoir Heating Time**	15	—	—	Minutes
Direct Interelectrode Capacitances				
Anode to Grid	—	40	—	μμf
Grid to Cathode	—	30	—	μμf
Anode Current Time Jitter	—	—	0.01	Microseconds
Ionization Time†, approximate	—	—	1	Microseconds
Grid Drive‡				

Mechanical

Mounting Position—Vertical, Base Down		
Net Weight, approximate	9	Pounds

Thermal

Type of Cooling—Convection¶		
Ambient Temperature Limits	−55 to +75	C

MAXIMUM RATINGS—ABSOLUTE VALUES

Maximum Peak Anode Voltage		
Inverse▲		
Forward, ♦ minimum supply voltage = 3500 volts d-c	33,000	Volts
Maximum Cathode Current		
Peak	2000	Amperes
Average	4.0	Amperes
Maximum Averaging Time	1	Cycle
RMS‖	75	Amperes
Anode Dissipation Factor♥	30 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 above limits are interrelated and it does not necessarily follow that combinations of limits can be attained simultaneously. For further information consult the Tube Department, Schenectady 5, N. Y.

* The optimum reservoir voltage for operation at maximum tube voltage, maximum peak and average tube currents, and at a repetition corresponding to the rated operation factor is inscribed on the base of the tube and must be held within ±2.5 percent. Applications involving operation at other conditions will necessitate a redetermination of the optimum reservoir voltage.

**Stand-by operation with heater and reservoir voltages is not recommended. Where necessary, the tube should be operated at full equipment conditions for a minimum of two hours during each twelve-hour period of stand-by.

† 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.

‡ Driver pulse measured at 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 maximum.

¶ An air blast may be directed at the anode and upper portions of the tube envelope to extend performance under high-anode-dissipation-factor operation, provided envelope and anode temperatures exceed 150 C.

▲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.

♦ Instantaneous starting is not recommended. However, in cases where it is necessary to apply anode voltage instantaneously, the maximum permissible forward starting voltage is 22,000 volts peak. The power-supply filter should be designed to limit the rate of application of this voltage to 550,000 volts per second.

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

♥Product of the peak forward anode voltage, pulse repetition rate, and peak anode current.

X-RAY WARNING NOTICE

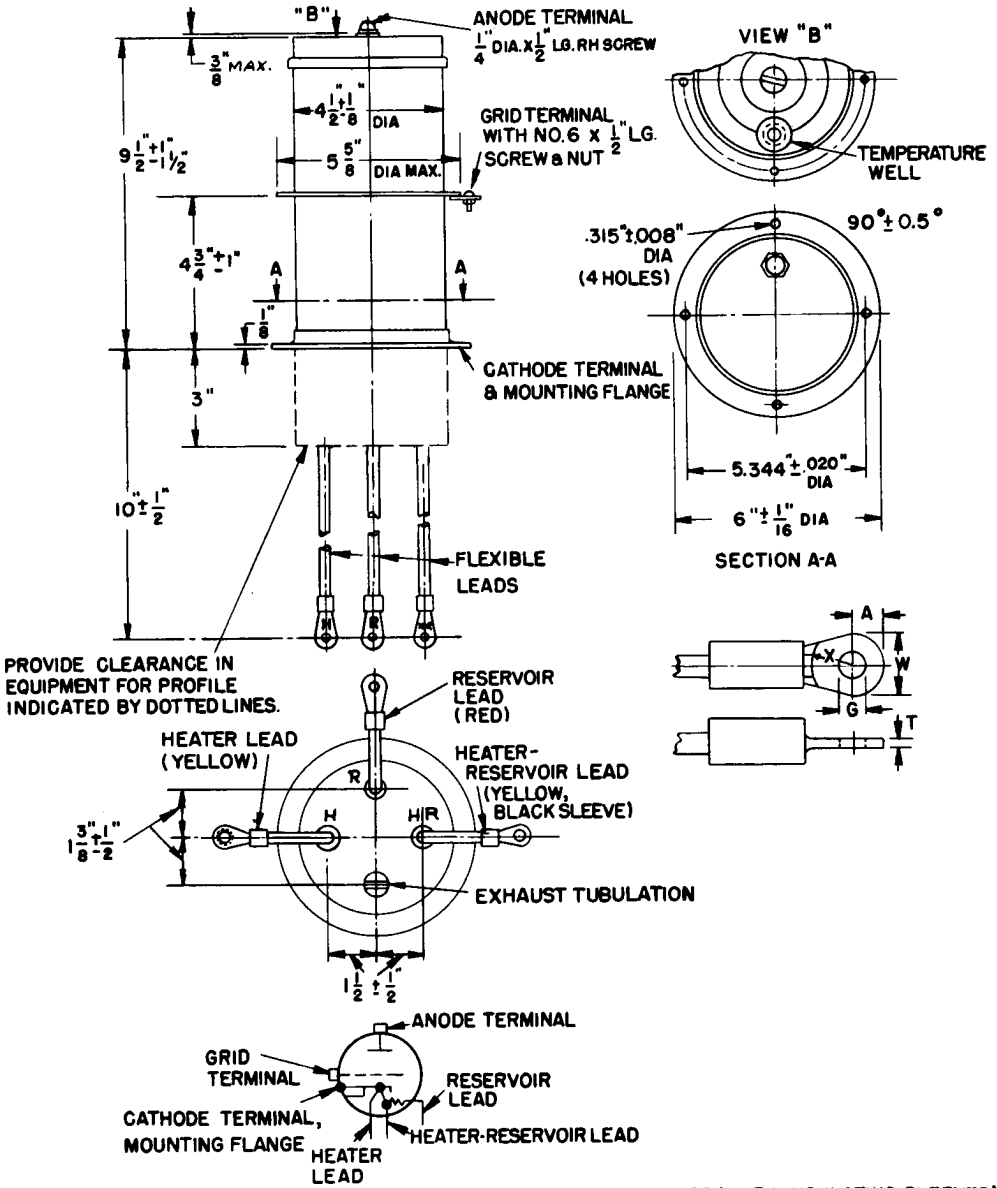
If the GL-7390 is operated at anode voltages in excess of 16 kilovolts, X-ray radiation shielding may be necessary to protect the user against possible danger of personal injury from prolonged exposure at close range. For further information consult the following references or other standard texts on 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	# 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 SCREW HOLE.