Litton
Electron Devices

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DATA SHEET

THYRATRON TYPE L-4945A

DEUTERIUM, CERAMIC-METAL, TETRODE WITH GRADIENT GRID

DESCRIPTION

The L-4945A is a ceramic-metal, double-gap, tetrode, deuterium thyratron. It is designed for applications with high coulomb transfer and/or high anode current reversal, such as encountered in crowbar applications. The shielded gap, gradient grid construction ensures stable, long term, HV holdoff reliability while minimizing X-ray emission. An auxiliary grid is incorporated for constant, short, triggering delay time and drift. The tube should be mounted by means of the cathode flange in a vertical position. Cooling is by forced air or oil immersion.

RATINGS

DESCRIPTION	MAX.	UNITS
Maximum peak anode voltage, forward, epy (Note 1)	40	Kilovolts
Maximum peak anode current, ib	1,500	Amperes
Maximum reverse anode current, ibx	1,000	Amperes
Maximum conducted charge, capacitor discharge plus power supply follow on	7	Coulombs
Maximum average anode current, Ib	2	Amperes DC
Maximum anode current rate of rise, dik/dt	50,000	Amperes/μSec.
Maximum anode delay time (Note 2)	0.4	Microsecond
Critical anode voltage for conduction, Ebb	2	Kilovolts
Ambient temperature	-55°to +125°C	

DESCRIPTION	NOM.	MIN.	MAX.	UNITS
CONTROL GRID, G2				
Peak trigger voltage, egy2	1,000	800	2,500	Volts
Trigger voltage pulse duration, tp	----	1	----	Microsecond
Trigger voltage rise time, tr	----	0.07	0.25	Microsecond
Trigger source impedance, Zg2	100	50	200	Ohms
Short circuit trigger current, Igy2	5	0.6	50	Amperes
Negative control grid bias, Ecc2	-100	- 50	-150	Volts DC
AUXILIARY GRID, PRIMER, G1				
Open circuit DC voltage, Egy1	150	75	250	Volts DC
Short circuit DC current, Igy1	100	50	250	Milliamps DC
HEATERS				
Heater voltage, Ef	6.3	6.1	6.5	Volts
Heater current (at 6.3 volts), If	19	----	22	Amperes
Reservoir voltage, Eres (Note 1)	6.3	6.1	6.5	Volts
Reservoir current, Ires (at 6.3 volts)	4.5	3	6	Amperes
Warm-up time, tk		5	----	Minutes

Initiated 5/14/98

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L-4945A SPECIFICATION NOTES:

NOTE 1: During the first 25 microseconds after conduction, the peak inverse anode voltage should not exceed 25 kV for maximum life. This device is designed to conduct in the reverse direction.

NOTE 2: The limits of anode delay time and anode time jitter are based on the minimum trigger. Using the highest permissible trigger voltage and lowest trigger source impedance reduces these values below the limits specified.
The anode delay time is measured between the 25 percent point on the rising portion of the unloaded grid voltage pulse, and the point at which anode conduction first evidences itself on the loaded grid pulse.

NOTE 3: The nominal reservoir voltage is the correct value for one typical operating (factory test) condition, but may not be the optimum value for all types of operation. This value may be used initially in new applications and the optimum value may then be obtained by exploring the range of voltage on either side of the recommended value. Excess reservoir voltage will result in a failure of the thyratron to deionize between pulses (continuous conduction). Insufficient reservoir voltage will result in excessive anode dissipation, indicated by large time jitter on the leading edge of the anode current pulse and long anode delay times on the control grid voltage waveform, and ultimately, destructive heating of the anode.

NOTE 4: A voltage divider, consisting of two(2) series 20 to 40 megohm resistors, shall have its end points connected to the anode and cathode. The center tap of this divider shall be connected to the gradient grid of the tube. It is recommended that this arrangement be employed whether low voltage operation is required or not.

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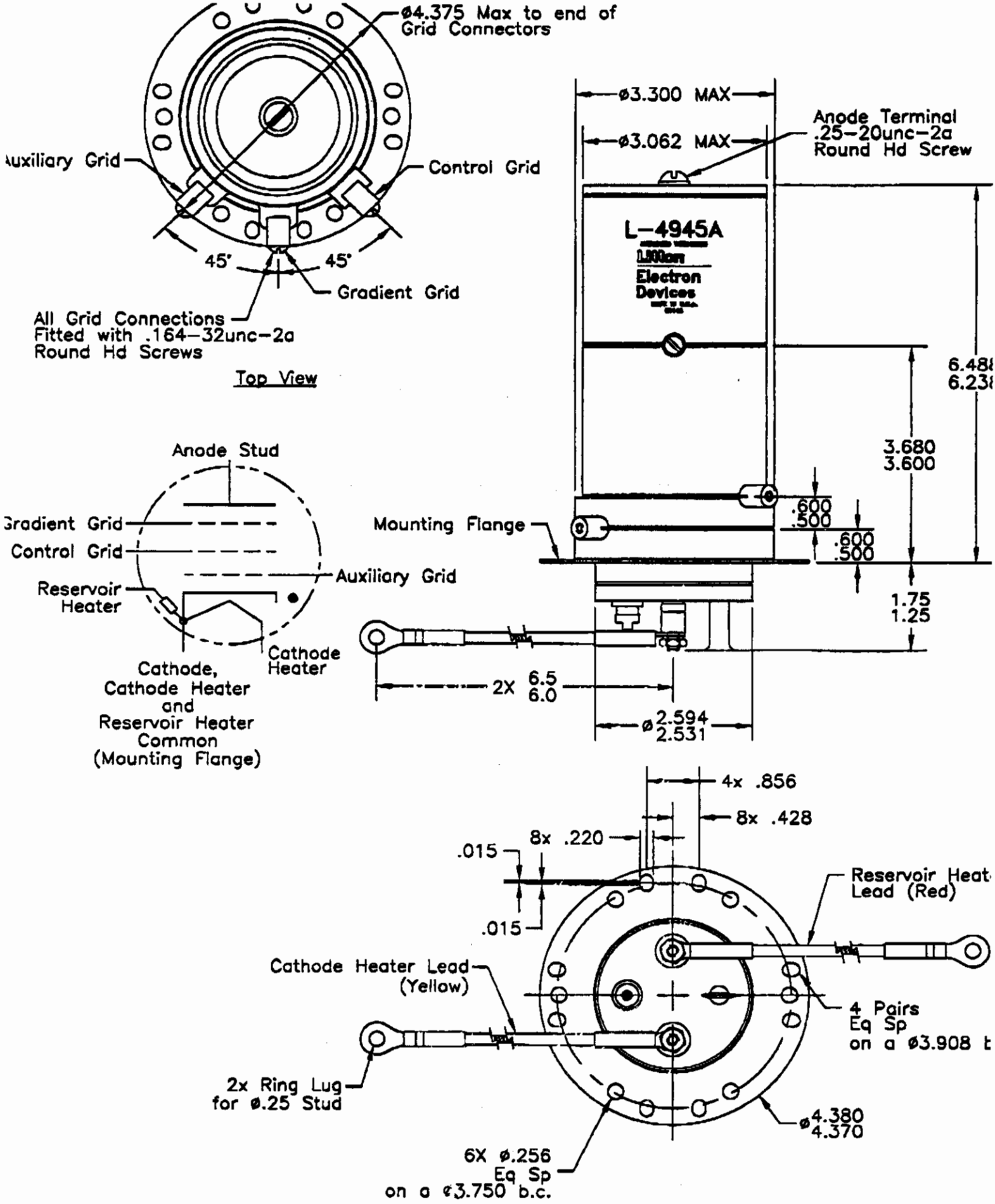
ø4.375 Max to end of Grid Connectors
Auxiliary Grid
Control Grid
45°
45°
Gradient Grid
All Grid Connections Fitted with .164–32unc–2a Round Hd Screws
Top View
ø3.300 MAX
ø3.062 MAX
Anode Terminal .25–20unc–2a Round Hd Screw
L–4945A
Electron Devices
6.488
6.238
3.680
3.600
.600
.500
.600
.500
Mounting Flange
1.75
1.25
2X 6.5
6.0
ø2.594
2.531
Anode Stud
Gradient Grid
Control Grid
Auxiliary Grid
Reservoir Heater
Cathode Heater
Cathode, Cathode Heater and Reservoir Heater Common (Mounting Flange)
4x .856
8x .428
8x .220
.015
.015
Reservoir Heat Lead (Red)
Cathode Heater Lead (Yellow)
4 Pairs Eq Sp on a ø3.908 b
2x Ring Lug for ø.25 Stud
ø4.380
4.370
6X ø.256 Eq Sp on a ¢3.750 b.c.