

# NATIONAL

## NL-9000 Ignitron

The NL-9000 is a size "E" dual bath cooled ignitron intended for use as a high energy switch in capacitor circuits. The following ratings are at this printing maximum and may be exceeded only with the end users full liability.

**Anode Material-**            **NL9000** - "Graphite"            **NL9000A** - "Stainless"

### GENERAL:<sup>1</sup>

Mercury pool electronic tube, water cooled

Number of electrodes:

Main anode -----	1
Ignitors -----	2
Cathode "Body with Hg Pool" -----	1

### IGNITORS:

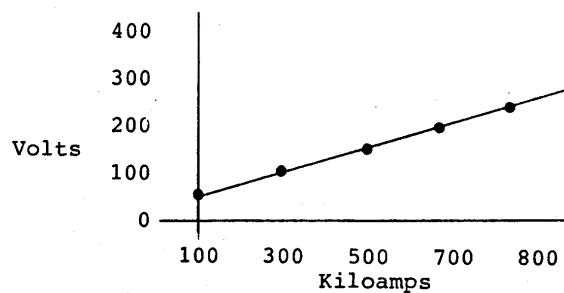
Forward Voltage "open circuit" -----	1000-3500 V
Inverse voltage -----	5 V
Current peak "short circuit" -----	200-500 A
Length of firing pulse -----	5-15 usec
Net weight, approximately -----	60 lbs

### COOLING REQUIREMENTS:

Flow minimum at peak current -----	6 GPM
Temperature range <sup>2</sup>	
Cathode cup -----	15-25° C
Side Walls -----	15-45° C

### MAXIMUM RATING: DAMPED DISCHARGE (NON-SIMULTANEOUS RATING)

Peak forward or inverse voltage -----	10 kV <sup>5</sup>
Peak anode current <sup>3</sup> -----	700 kA
Coulombs per pulse at max amps -----	250 C
Pulse repetition rate per minute -----	1



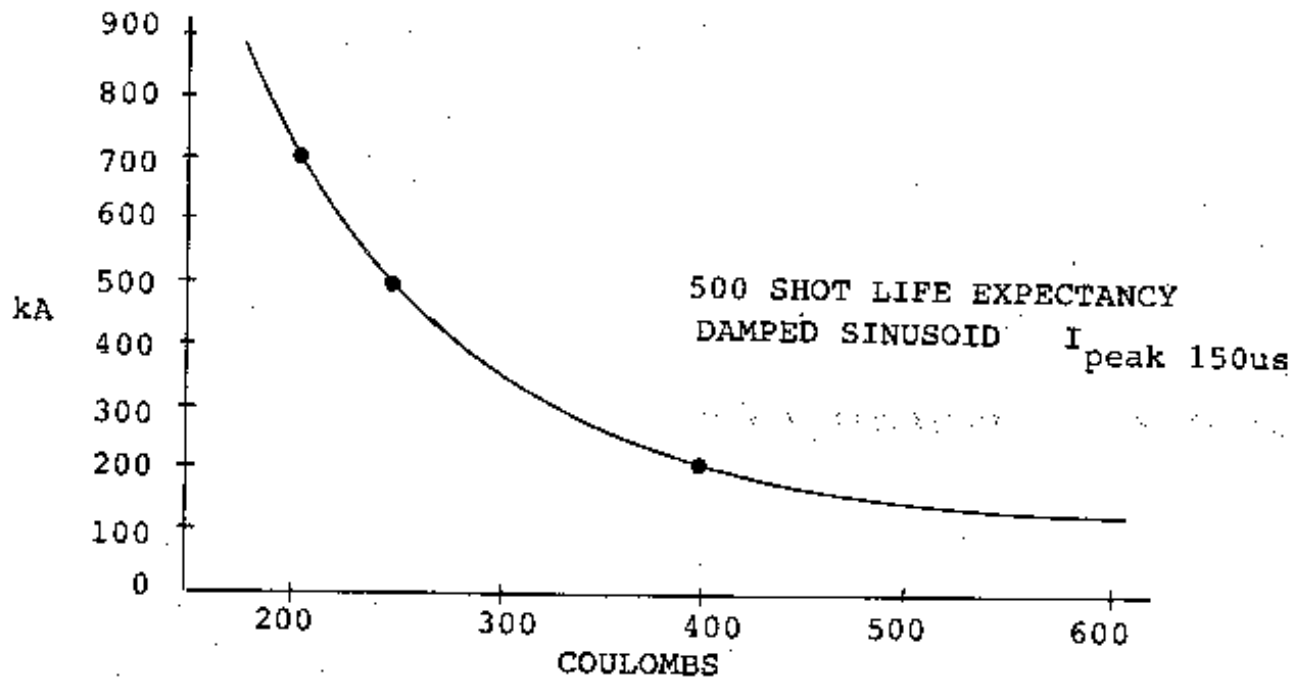
**TUBE DROP AT PEAK CURRENT**  
**DAMPED SINUSOID**     $I_{peak}$  150us

**NATIONAL ELECTRONICS**

A Division of Richardson Electronics, Ltd.

LaFox, IL 60147 (630) 208-2300

## NL- 9000



**TYPICAL CURVE SHOWING RELATIONSHIP  
OF  $I_{peak}$  VERSUS COULOMBS TRANSFERRED**

- <sup>1</sup> The mounting flange attached to the bottom of the tube can be modified in most cases for compatibility with the users socket. In all cases coaxial returns "squirrel cages" are recommended. The anode contact must not be rigid in respect to the cathode and the flexible anode connection must absorb all bus bar movement.
- <sup>2</sup> Dual cooling control recommended with the cathode cup at the lower temperature. Cooling required for all applications.
- <sup>3</sup> Voltage hold off testing after every shot prior to recharging of the main banks recommended above the 300 kiloamp level. Automatic ignitor firing for fault conditions desirable at any energy level. The above design parameters are to insure symmetrical discharges through the ignitron by controlling prefires at high energy levels which will destroy the ignitors or feed thrus.
- <sup>4</sup> Due to anode-cathode spacing careful leveling is required.
- <sup>5</sup> Hold off voltage can be increased to 20,000 with the addition of silicone potting over the anode glass section.

**NL- 9000**  
**NL-9000A**

