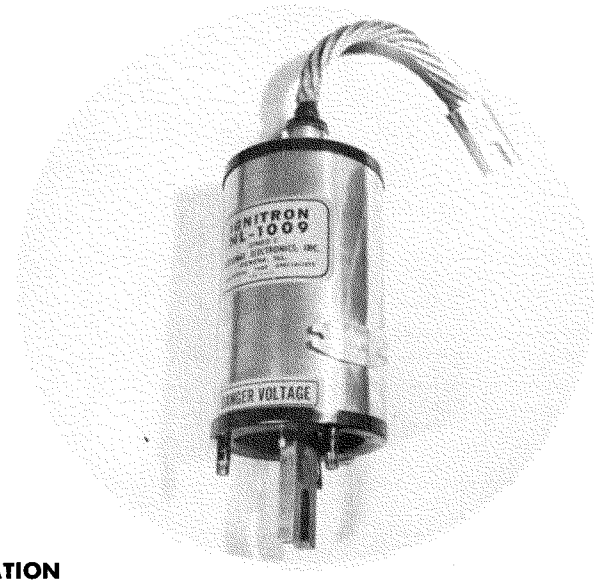
NL-1009 IGNITRON

Jumbo C

220 Amperes dc



National Ignitron NL-1009 is a metal, water-cooled, mercury pool tube designed especially for welder control and similar AC control applications. Its rating is approximately equivalent to a 750 ampere magnetic contactor. **NL-1009** utilizes a thermostat mount brazed to an all-copper cooling system that provides exceptional cooling efficiency. The inner cylinder, copper cooling coil, and thermostat mount being brazed together in a single unit assures a rugged, dependable, and adjustment free temperature control system that operates directly on inner cylinder temperature.

TECHNICAL INFORMATION

AC Control Applications — Ratings are based on full-cycle conduction (no phase delay) regardless of whether or not phase control is used, on frequencies from 25 to 60 cycles, and any voltage between 250 and 600 volts rms. Ratings are for two tubes in inverse parallel.

[1]Maximum demand — kva	1700*
[1]Corresponding maximum average anode current per tube — amps DC	120
[1]Maximum average anode current per tube — amps DC	220
[1]Corresponding maximum demand — kva	570
[1]Maximum averaging time — seconds	
at 600 volts rms	8
at 250 volts rms	19.1
Maximum surge current — peak amps	280% of max. rms demand current

[2]Rectifier Applications — Ratings are based on intermittent duty, on no phase delay, and on frequencies from 50 to 60 cycles. When phase control is used, current ratings are reduced as per phase control current rating curve. Values are for one tube.

Maximum peak anode voltage — volts	1200	1500
Maximum peak anode current — amps	2100	1680
Corresponding Average Current—amps DC	28	22.4
Maximum average anode current — amps DC	98	78.4
Corresponding peak current — amps	588	470
Maximum averaging time, sec.	6.25	6.25
Max. ratio of average to peak current, maximum averaging time 0.2 seconds	.166	.166
Max. ratio of peak fault to peak anode current	12.5	12.5
Max. duration time of surge current — sec.	.15	.15

Ignition Requirements — (Same for both applications.)

Ignitor Voltage

Maximum instantaneous allowed, ignitor positive	anode voltage
[3]Maximum instantaneous required, ignitor positive — volts	200
Maximum instantaneous allowed, ignitor negative — volts	5

Ignitor Current

Maximum instantaneous allowed — amperes	100
[3]Maximum instantaneous required — amperes	30
Maximum rms allowed — amperes	10
Maximum average allowed — ampere	1
[3]Ignitor ignition time maximum — microseconds	100
Ignitor current max. averaging time — seconds	5

Cooling Requirements — (Same for both applications.)

Type of cooling	Water
Minimum inlet water temperature, °C	0
Maximum cooling system temperature (measured at thermostat mount), °C	
Rectifier applications	45
AC control applications	
At 600 volts rms	45
At 500 volts rms	50
At 250 volts rms	55

Water flow may be reduced at light loads if cooling system temperature (measured at thermostat mount) is maintained within limits.

Typical cooling requirements at 500 volts rms operation for AC control applications, (2 tubes).

Inlet Water Temp. °C	100% Load Water Flow Required G.P.M.	100% Load Pressure drop per tube lbs. per sq. in.	50% Load Water flow required G.P.M.	50% Load Pressure drop per tube lbs. per sq. in.
15	⅞	1.5	⅝	.6
30	1⅜	5.0	⅞	1.5

More water is required at 600 volts to maintain cooling system temperature within limits and less at 250 volts.

Water temperature rise at 2 G.P.M., full load, °C	5
Approximate temperature rise inlet water to thermostat, (at 2 GPM and full load) °C	8.5

GENERAL CHARACTERISTICS

Number of Anodes	1	Peak arc drop at 691 peak amps. — approx. volts	16
Number of Ignitors	1	Net weight — lbs.	15½
Mounting Position	Vertical		
Peak arc drop at 6800 peak amps — approx. volts	35	Approx. shipping weight — lbs.	19

[1]Using log-log paper, straight line interpolation of RMS Demand Current vs. Average Anode Current and Maximum Averaging Time vs. Anode Voltage may be used to determine intermediate ratings.

[2]Using log-log paper, straight line interpolation of Peak Anode Current vs. Average Anode Current may be used to determine intermediate ratings. See curves for details.

[3]Ignition will occur if either maximum required instantaneous potential is applied or maximum required instantaneous current flows for the rated maximum ignitor ignition time.

*For 500 to 600 volts rms. Max. demand current for 250 Volts rms is 4800 amperes rms, see curve. For voltages between 250 and 500, use proportional values between 3400 and 4800 amperes rms.

Printed in USA 8-59

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GENEVA, ILLINOIS, U. S. A.

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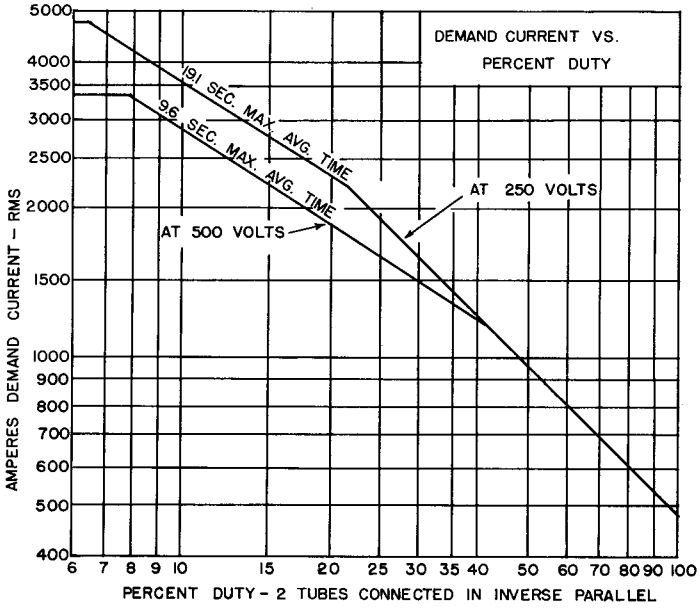
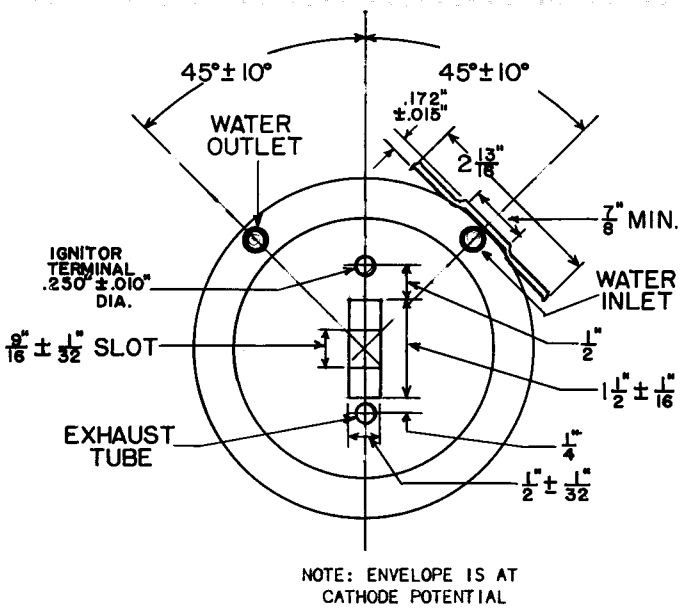
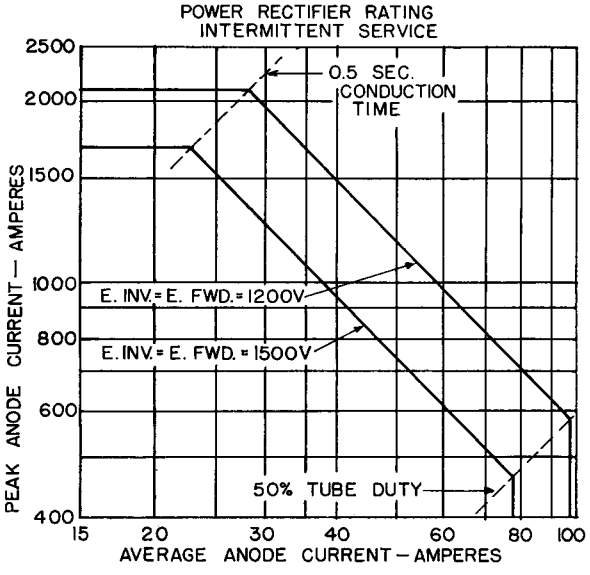
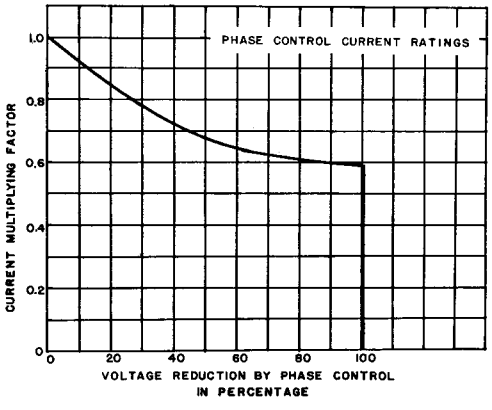
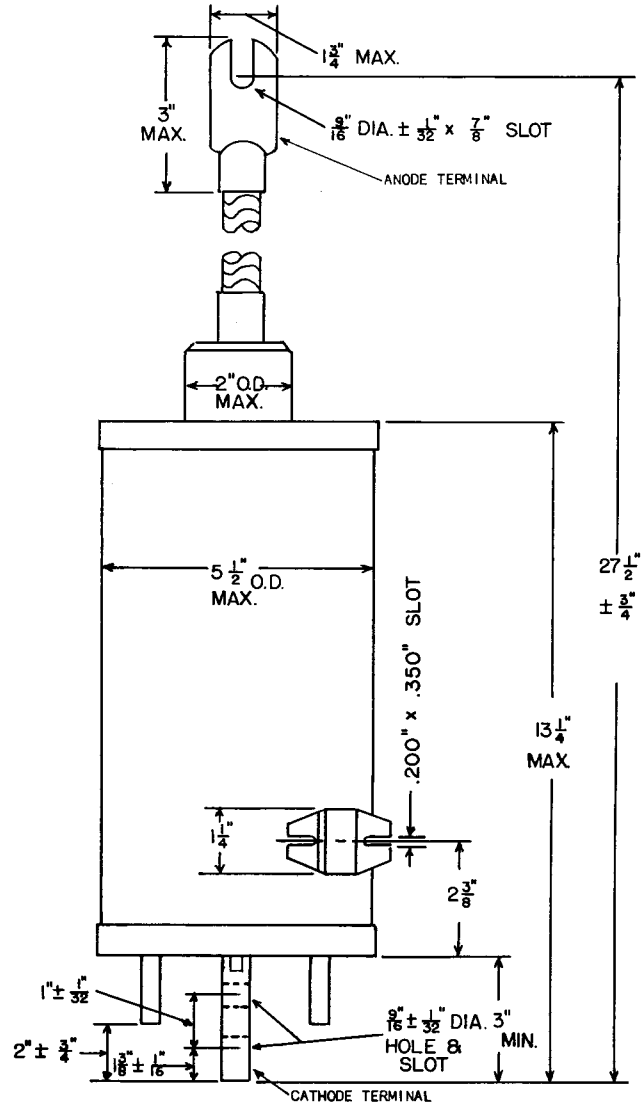




NOTE: ENVELOPE IS AT CATHODE POTENTIAL







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