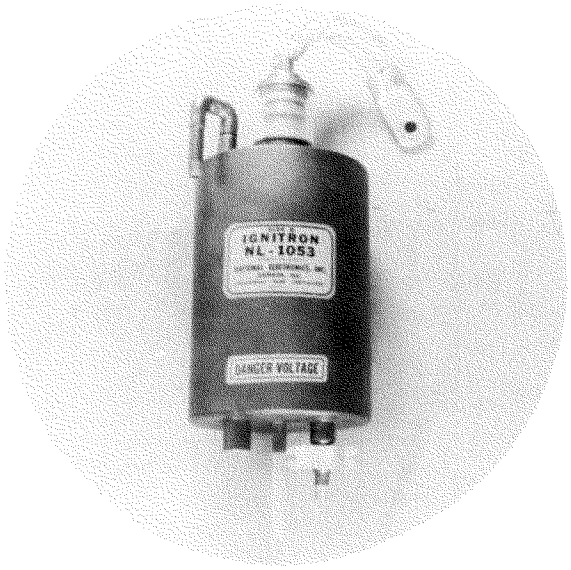
NL-1053 IGNITRON

Size D

355 Amperes dc

National Ignitron NL-1053 is a metal, water-cooled, mercury pool tube designed especially for welder control and similar AC control application. Its rating is approximately equivalent to a 1200 ampere magnetic contactor.

NL-1053 utilizes a thermostat mount brazed solidly to the cathode header and cooling coil to give accurate temperature indication and tube protection. The large stainless steel envelope with internal cooling coil greatly increases the cooling surface for long life and arc-back-free operation.



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	2400
[1]Corresponding maximum average anode current per tube — amps DC	192
[1]Maximum average anode current per tube — amps DC	355
[1]Corresponding maximum demand — kva	800
[1]Maximum averaging time — seconds at 600 volts rms	9.2
at 250 volts rms	22.
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	600	1200	1500
Maximum peak anode current — amps	4000	3000	2400
Corresponding average current — amps DC	54	40	32
Maximum average anode current—amps DC	190	140	112
Corresponding peak current — amps	1140	840	672
Maximum averaging time, sec.	6.5	6.5	6.5
Max. ratio of average to peak current, maximum averaging time 0.2 seconds	.166	.166	.166
Max. ratio of peak fault to peak anode current	12.5	12.5	12.5
Maximum duration time of fault current — sec.	.15	.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	50
AC Control Applications	
At 600 volts rms	50
At 500 volts rms	55
At 250 volts rms	60
Approximate water flow required at continuous full load GPM	1½ to 3
Water flow may be reduced if cooling system temperature is maintained within limits.	
Pressure drop per tube at 3 GPM — lbs. per sq. in.	3.2
Water temperature rise at 3 GPM, full load — °C	8
Approx. temperature rise, water at inlet to thermostat mount (at full load and at 3 GPM) — °C	10

GENERAL CHARACTERISTICS

Number of Anodes	1
Number of Ignitors	1
Mounting Position	Vertical
Peak arc drop at 13,600 peak amps — approx. volts	36
Peak arc drop at 1115 peak amps — approx. volts	17
Net weight — lbs.	35½
Approx. shipping weight — lbs.	40

[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.

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NATIONAL ELECTRONICS, INC.
GENEVA, ILLINOIS, U. S. A.

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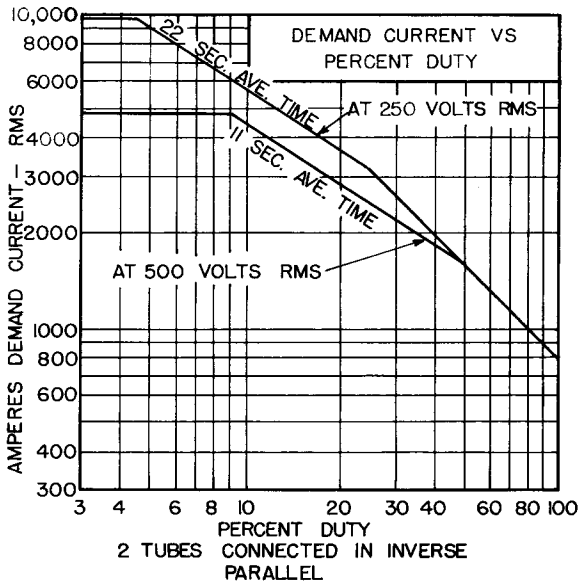

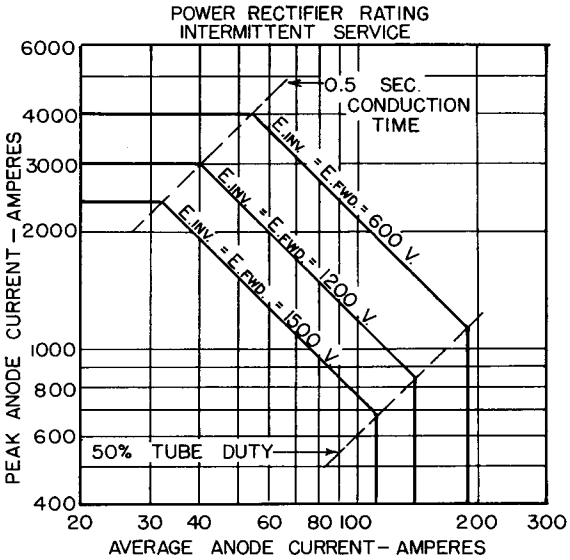

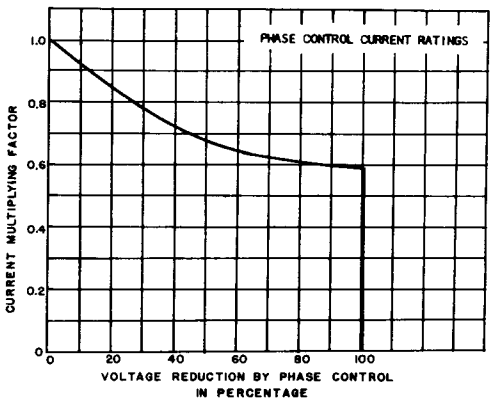

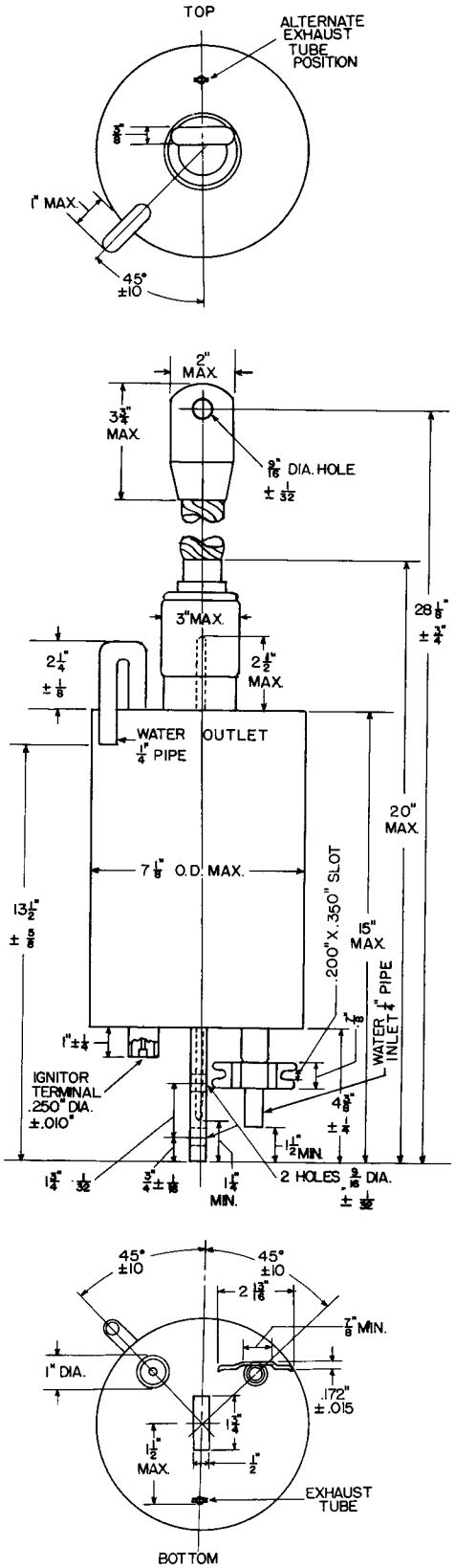

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