

IGNITRON

Equivalent to 5551A

The data should be read in conjunction with the Ignitron Preamble.

ABRIDGED DATA

Size B, stainless-steel jacketed, water-cooled ignitron intended primarily for single-phase or three-phase (frequency changing) resistance welding control applications. It has a platform for mounting a detachable thermostat for temperature control.

For an electrically identical version with coaxial cathode terminal see BK442/7669.

Supply voltage (r.m.s.)	250 to 600	V
Maximum demand (2 ignitrons in inverse parallel, average current not exceeding 30.2A)	600	kVA
Maximum average anode current (for demand not exceeding 200kVA)	56	A

GENERAL

Electrical

Number of electrodes:

main anode	1
cathode (mercury pool)	1
ignitor	1

Arc voltage drop (approx):

at 150A peak current	13	V
at 3400A peak current	26	V

Mechanical

Overall length (excluding flexible lead)	13.000 inches (330.2mm) max
Overall width	5.750 inches (146.1mm) max
Body diameter	3.250 inches (82.55mm) max
Net weight	3¾ pounds (1.7kg) approx
Mounting position	vertical, anode terminal up

Accessories

Water control thermostat (normally open, closes at 36°C approx)	ZD100552
Over-temperature thermostat (normally closed, opens at 52°C approx)	ZD100551

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Accessories (continued)

Thermostat contact ratings:

a.c. voltage	125	250	440	600	V max
a.c. current	3.0	1.5	1.0	0.5	A max
voltage between switch contacts and ignitron envelope (peak)				1.0	kV max
Ignitor lead					ZD100222

MAXIMUM AND MINIMUM RATINGS (Absolute values)

Single-phase Resistance Welding Control Service

Ratings are for two ignitrons connected in inverse parallel. Full cycle conduction must be assumed whether phase control is used or not.

	Min	Max	
Anode			
Supply voltage (r.m.s.) (frequency range 25 to 60Hz)	250	600	V
Demand (for average current not exceeding 30.2A)	—	600	kVA
Anode current (average) (for demand not exceeding 200kVA)	—	56	A
Anode current averaging time:			
at 600V _{r.m.s.}	—	7.5	s
at 440V _{r.m.s.}	—	10.2	s
at 250V _{r.m.s.}	—	18	s
Fault current (peak):			
at 600V _{r.m.s.}	—	2800	A
at 250V _{r.m.s.}	—	6720	A
Duration of fault current	—	0.15	s

Three-phase (Frequency Changing) Welding Control or Power Rectifier Service (Intermittent Duty)

Anode

	Peak anode voltage 1.2kV	Peak anode voltage 1.5kV	
Anode current (peak)	600	480	A max
corresponding average	5.0	4.0	A max
Anode current (average)	22.5	18	A max
corresponding peak	135	108	A max
Averaging time	10	10	s max
Peak fault current	7500	6000	A max
Duration of fault current	0.15	0.15	s max
Frequency range	50–60	50–60	Hz

MAXIMUM AND MINIMUM RATINGS (Continued)

Ignitor

Peak forward ignitor voltage	Anode voltage	max
Peak inverse ignitor voltage	5.0	V max
Ignitor current:		
peak forward	100	A max
r.m.s.	10	A max
average	1.0	A max
averaging time	5.0	s max

IGNITOR CIRCUIT REQUIREMENTS

Anode Firing

Ignitor voltage required to fire	200	V min
Ignitor current required to fire	12	A min
Typical current at ignition	5 to 8	A
Starting time at required voltage or current	100	μ s max

Separate Excitation

Open-circuit voltage of excitation circuit	450	V min
Short-circuit current of excitation circuit	45	A min
Firing pulse length (approx. sine wave, average anode current greater than 20A)	150	μ s min
Recommended pulse length (approx. sine wave)	500	μ s

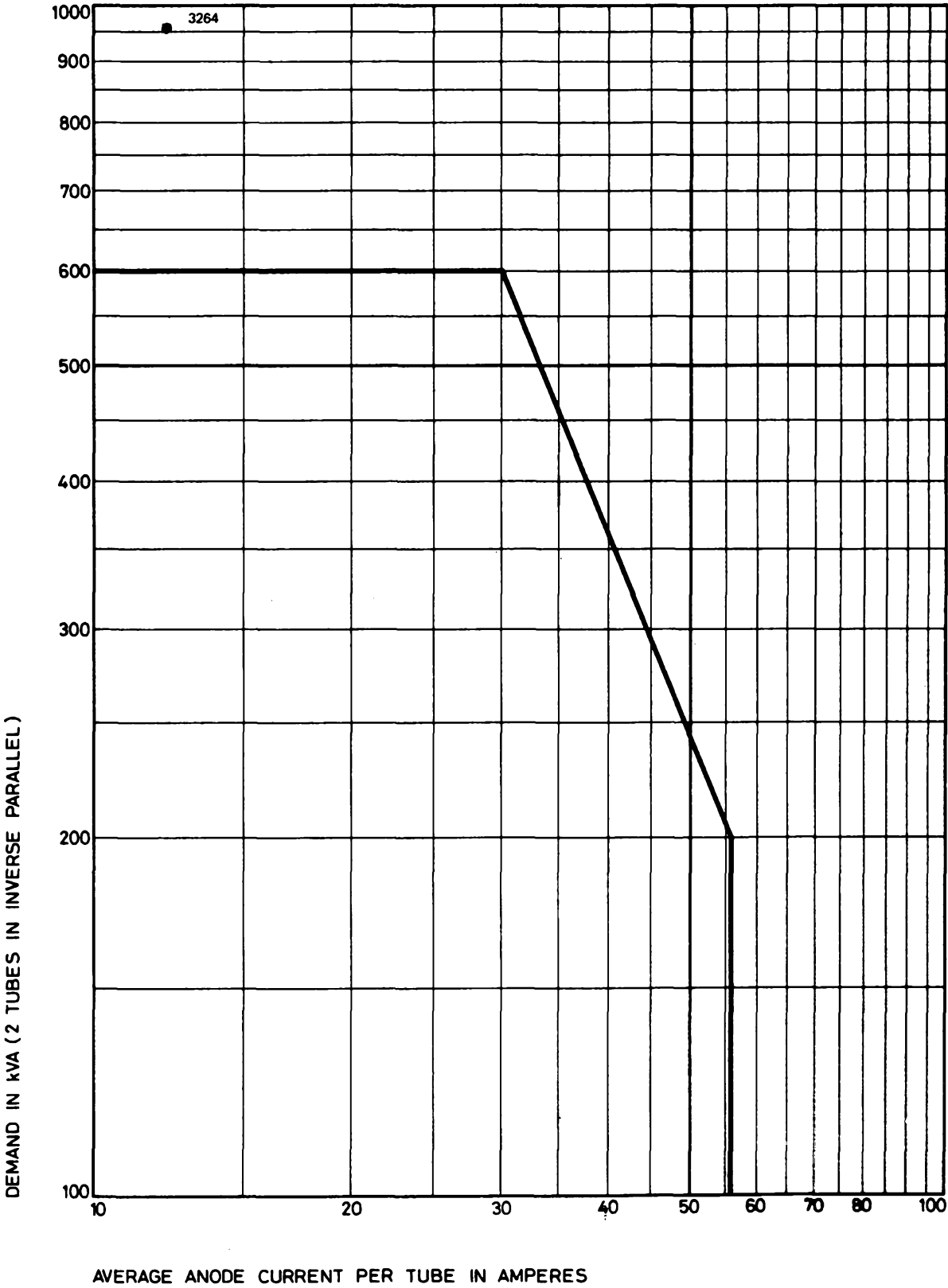
COOLING

Minimum water flow rate (see note)	1.0	imp.gal/min
	4.5	l./min
Inlet water temperature	10	$^{\circ}$ C min
Outlet water temperature	40	$^{\circ}$ C max
Temperature rise across jacket	4.0	$^{\circ}$ C max

Note

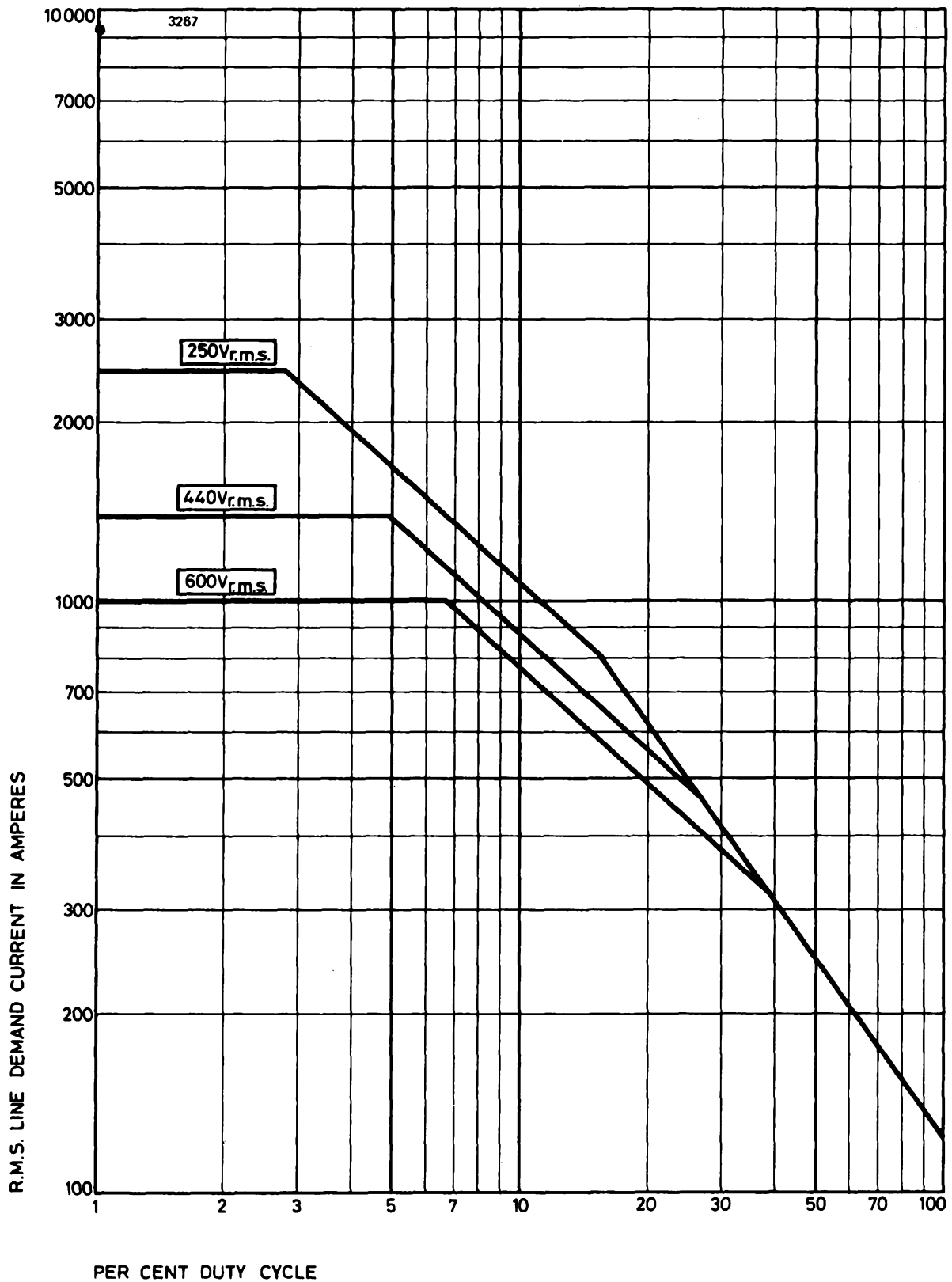
At the minimum flow rate of 1.0 imp.gal/min, the pressure drop across the jacket will be 1.8 lb/in² (0.13kg/cm²) approx. The water flow must be maintained for 10 minutes after switching off.

DEMAND KVA – AVERAGE ANODE CURRENT (MAXIMUM RATINGS)
Two ignitrons in inverse parallel for welder control at 250 to 600 volts



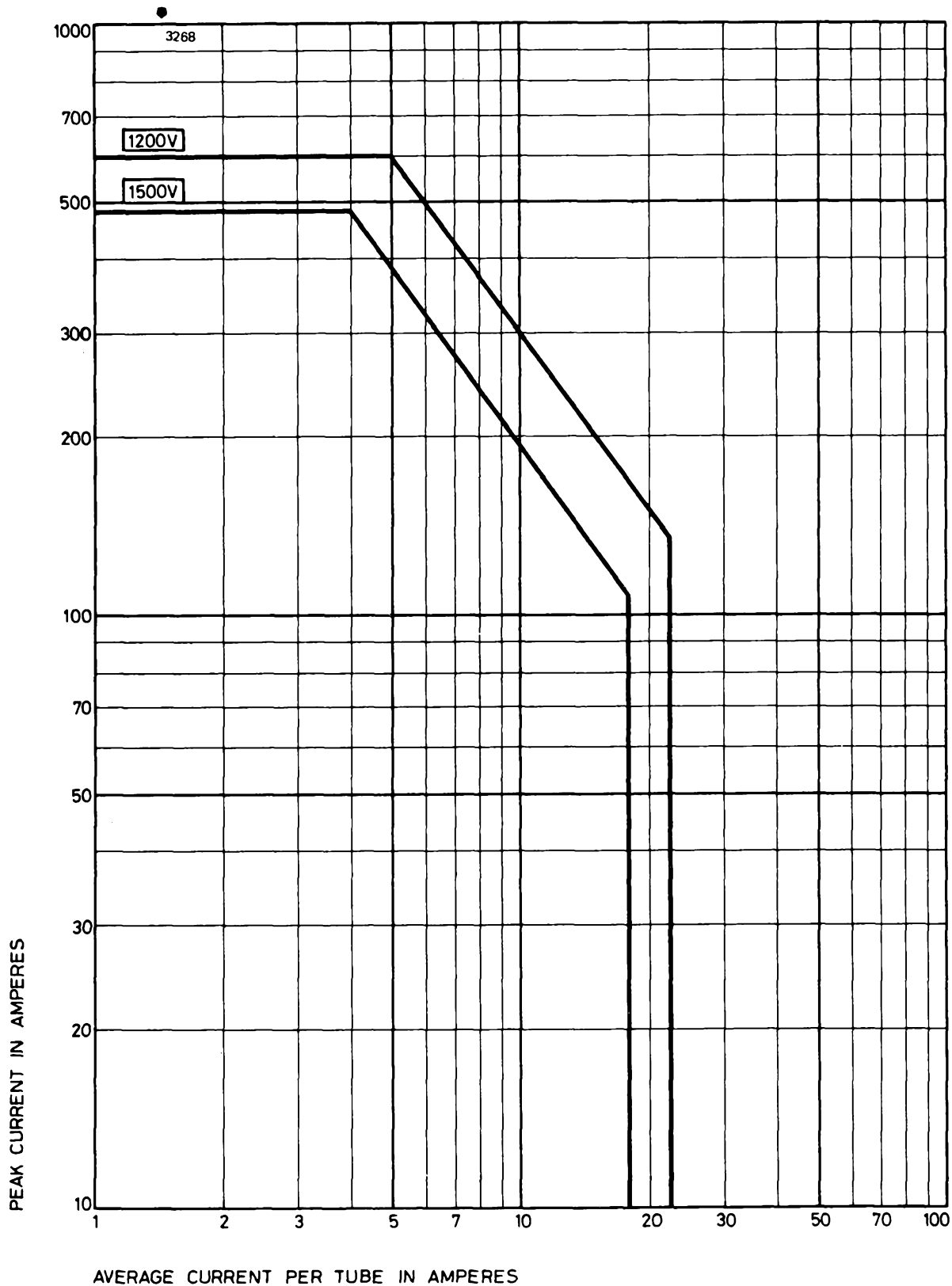
LINE DEMAND CURRENT – DUTY CYCLE (MAXIMUM RATINGS)

Two ignitrons in inverse parallel for welder control service

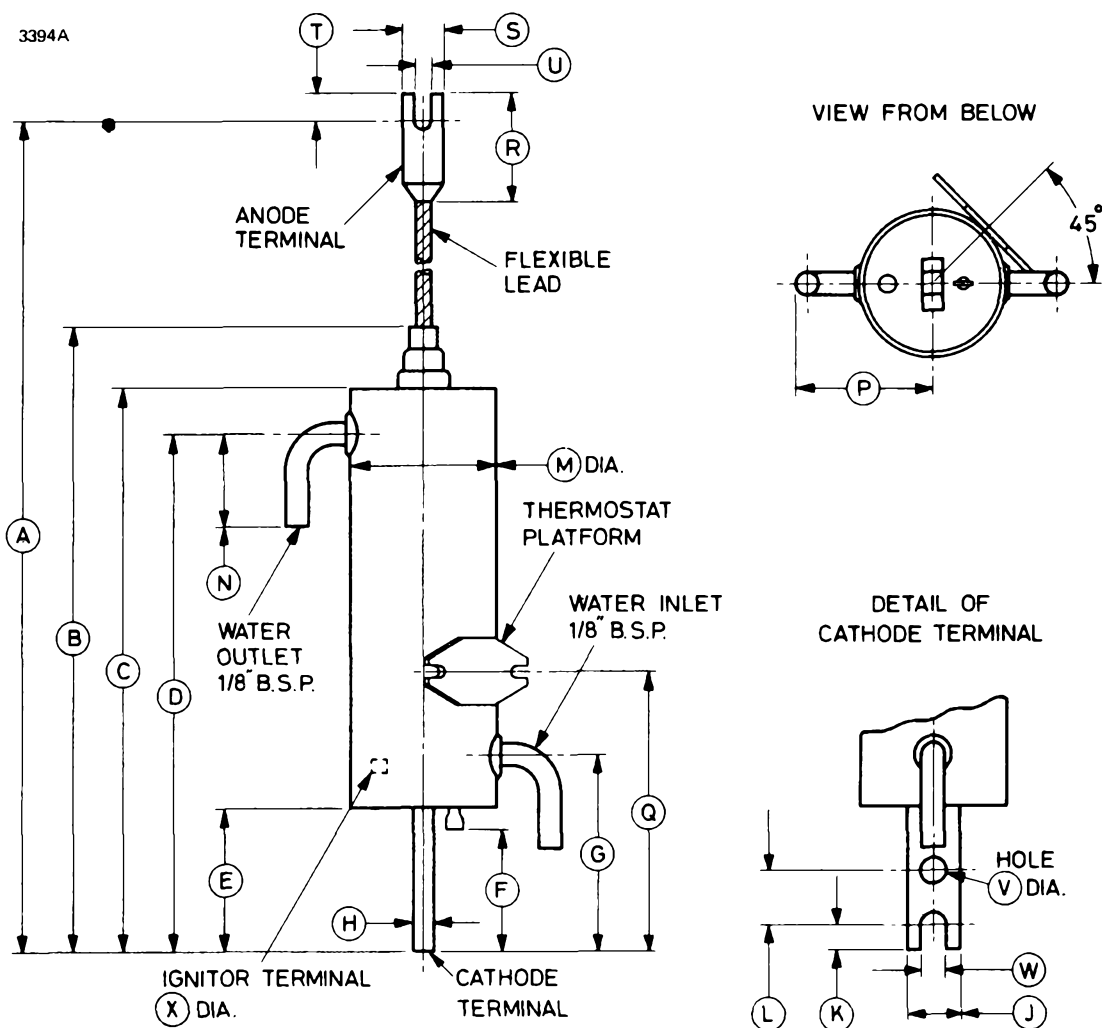


PEAK CURRENT – AVERAGE CURRENT PER IGNITRON (MAXIMUM RATINGS)

Three-phase welder control service



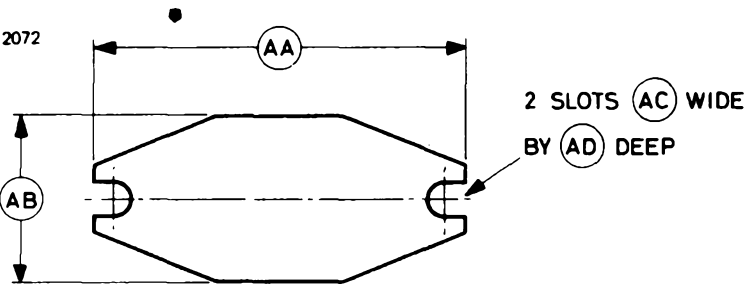
OUTLINE (All dimensions without limits are nominal)



Ref	Inches	Millimetres	Ref	Inches	Millimetres
A	21.750 min	552.5 min	M	3.250 max	82.55 max
B	13.000 max	330.2 max	N	2.500 max	63.50 max
C	11.000 max	279.4 max	P	2.875 max	73.03 max
D	9.500	241.3	Q	5.125 ± 0.250	130.18 ± 6.35
E	2.375 min	60.33 min	R	2.375 max	60.33 max
F	2.000 min	50.80 min	S	1.000 max	25.40 max
G	3.625	92.08	T	0.812 max	20.62 max
H	0.375 ± 0.031	9.53 ± 0.79	U	0.406 ± 0.031	10.31 ± 0.79
J	1.000 ± 0.062	25.40 ± 1.57	V	0.437 ± 0.031	11.10 ± 0.79
K	0.500 ± 0.062	12.70 ± 1.57	W	0.437 ± 0.031	11.10 ± 0.79
L	1.000 ± 0.031	25.40 ± 0.79	X	0.250 ± 0.005	6.35 ± 0.13

Millimetre dimensions have been derived from inches.

Thermostat Mounting Plate (All dimensions without limits are nominal)



Ref	Inches	Millimetres
AA	2.750	69.85
AB	1.250	31.75
AC	0.219	5.56
AD	0.375	9.53

Millimetre dimensions have been derived from inches.