

QUICK REFERENCE DATA (maximum values)

Inert gas-filled triode for power control applications

Peak anode voltage	1.5	kV
Cathode current		
peak	40	A
average	3.2	A

This data should be read in conjunction with DEFINITIONS AND GENERAL OPERATIONAL RECOMMENDATIONS - THYRATRONs which precede this section of the handbook.

CHARACTERISTICS AND RANGE VALUES FOR EQUIPMENT DESIGN

The values given state the range over which the valve will operate. No allowance has been made in the data for supply voltage and component variations.

Anode

Peak anode operating voltage (forward and inverse)	1.5	kV
Anode voltage drop (approx. instantaneous value)		
$i_k = 3.2A$	12	V
$i_k = 40A$	18	V
Maximum commutation factor (see note 1)	130	VA/ μs^2
Ignition delay time	see page C1	
Anode Recovery time	see page C2	

Grid

Control characteristic	see page C1	
Maximum negative grid voltage		
before conduction	250	V
during conduction	10	V
Maximum positive grid current for anode voltage more positive than -10V		
peak	2.5	A
average (maximum averaging time = 20ms)	200	mA
Maximum peak positive grid current for anode voltage more negative than -10V	25	mA
Grid resistance		
maximum	100	k Ω
minimum (see page C2)		
Maximum critical grid current	20	μA

Cathode (see note 2)

Maximum cathode current		
peak	40	A
average (maximum averaging time = 15s) see page C3	3.2	A
surge (fault protection only, maximum		
duration = 100ms)	560	A
Minimum cathode heating time	60	s
Filament voltage	2.5	V
Filament current at 2.5V ($I_k = 0A$)	13.5	A

Capacitances

Grid-to-cathode capacitance	15	pF
Grid-to-anode capacitance (see note 3)	0.7	pF

Mechanical

Type of cooling	Convection	
Mounting position	Any position between vertical with base downwards and horizontal	
Net weight (approx.)	9.2 260	oz g
Weight of valve in carton	11lb 725	10oz g
Nominal dimensions of packing	5.5 x 5.5 x 12.25 in 140 x 140 x 310 mm	

RATINGS (ABSOLUTE MAXIMUM SYSTEM)

It is important that these ratings are never exceeded and such variations as mains fluctuations, component tolerances and switching surges must be taken into consideration in arriving at the actual valve operating conditions.

Anode

Maximum peak anode voltage (forward and inverse)	1.5	kV
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Grid

Maximum negative grid voltage		
before conduction	250	V
during conduction	10	V
Maximum positive grid current		
for anode voltage more positive than -10V		
peak	2.5	A
average (maximum averaging time = 20ms)	200	mA
Maximum peak positive grid current		
for anode voltage more negative than -10V	25	mA



Cathode

Maximum cathode current

peak	40	A
average (maximum averaging time = 15s) see page C3	3.2	A
surge (fault protection only, maximum duration = 100ms)	560	A

Minimum cathode heating time

60 s

Filament voltage

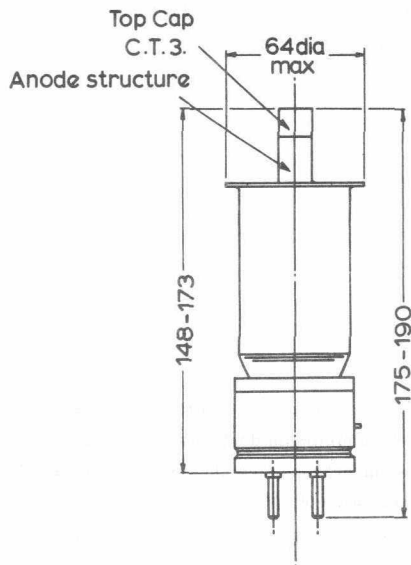
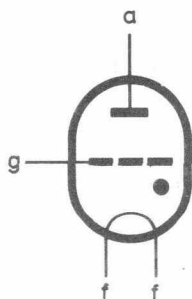
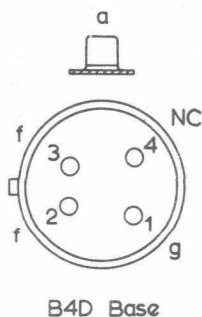
minimum	2.3	V
maximum	2.7	V

Ambient temperature

minimum	-55	°C
maximum	+70	°C

OPERATING NOTES

1. In order to minimise gas clean-up, the inverse voltage applied across the valve should be kept to a minimum during the immediate post conduction period. Therefore, the inverse voltage should not exceed 250V during the first 500 μ s after the cessation of anode current.
2. The anode and grid circuit returns should be made to the centre tap of the filament transformer.
3. In order to prevent spurious ignition due to capacitive anode-to-grid coupling, a capacitor should be connected between grid and cathode.

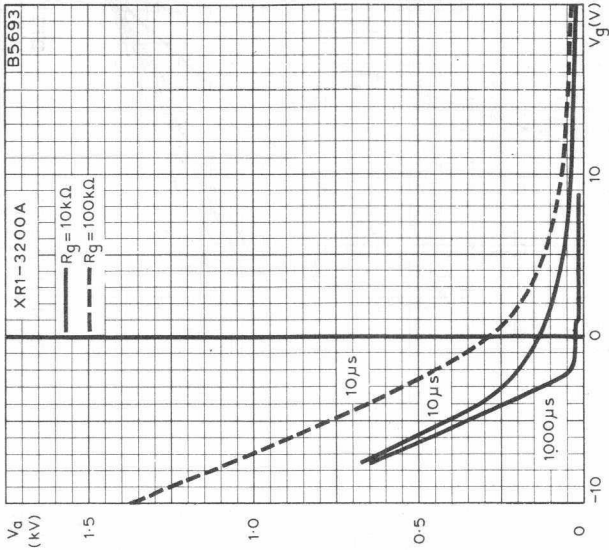


All dimensions in mm.

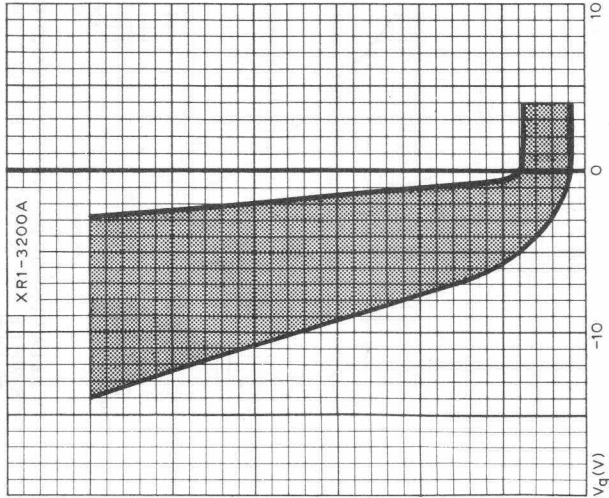
The anode structure must be left free to ensure adequate cooling by free convection

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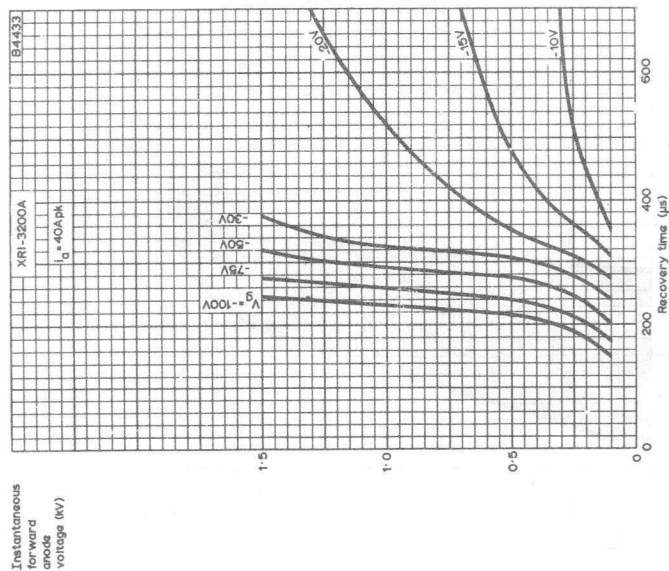


NOMINAL VARIATION BETWEEN ANODE AND GRID VOLTAGES FOR DIFFERENT IGNITION DELAY TIMES

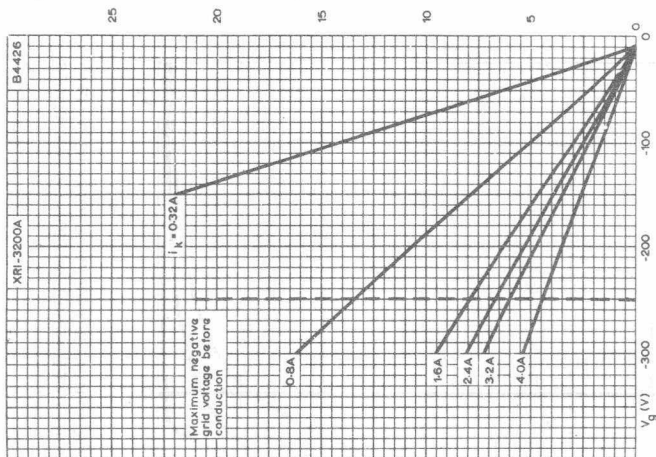


CONTROL CHARACTERISTIC

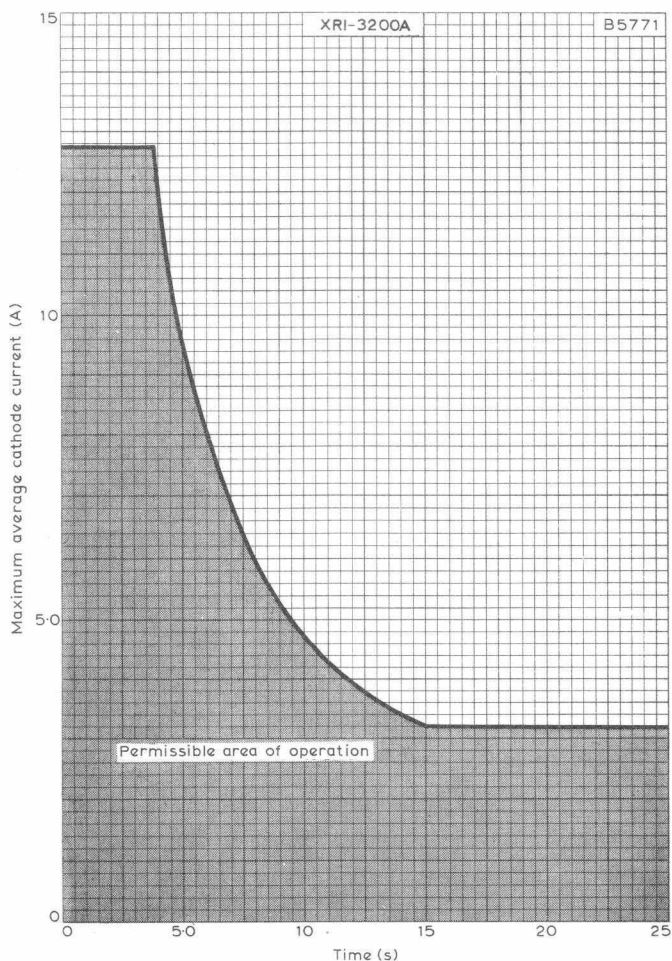




NORMAL RELATIONSHIP BETWEEN FORWARD ANODE VOLTAGE WHICH WILL NOT CAUSE RE-IGNITION AND TIME FROM CESSATION OF CONDUCTION



MINIMUM GRID RESISTANCE PLOTTED AGAINST NEGATIVE SUPPLY VOLTAGE WITH INSTANTANEOUS CATHODE CURRENT AS PARAMETER



This curve shows the maximum number of seconds in any fifteen second period for which a given average current may be drawn from a sinusoidal supply.

