TRIODE THYRATRON

Triode mercury vapour thyratron with negative control characteristic. Primarily designed for industrial control applications.

XG5-500

This data should be read in conjunction with DEFINITIONS AND GENERAL OPERATIONAL RECOMMENDATIONS—THYRATRONS preceding this section of the handbook.

LIMITING VALUES (absolute ratings, not design centre)

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

Max. peak anode voltage		
Inverse	5.0	kV
Forward	2.5	kV
Max. cathode current		
Peak (25c/s and above)	2.0	A
Peak (below 25c/s)	1.0	A
Average (max. averaging time 15s)	500	mA
Surge (fault protection max. duration 0.1s)	40	A
Max. negative control-grid voltage		
Before conduction	500	V
During conduction	10	V
Max. average positive control-grid current for anode voltage more positive than −10V (averaging time 15s)	50	mA
Max. peak positive control-grid current during the time that the anode voltage is more positive than −10V	250	mA
Max. peak positive control-grid current during the time that the anode voltage is more negative than −10V	50	mA
Max. control-grid resistor	100	kΩ
(Recommended min. control-grid resistor 10kΩ)		
Filament voltage limits	2.25 to 2.75	V
Max. power supply frequency	150	c/s
Condensed mercury temperature limits	35 to 70	°C

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CHARACTERISTICS

Electrical

Filament voltage	2.5	V
Filament current at 2.5V		
Average	5.0	A
Maximum	5.4	A
Anode to control-grid capacitance	4.0	pF
Control-grid to cathode capacitance	8.0	pF
Recovery (deionisation) time (approx.)	1,000	μs
Ionisation time (approx.)	10	μs
Anode voltage drop	16	V
Critical grid current at $V_a = 2.5$kV	<20	μA

Mechanical

Type of cooling	Convection	
Equilibrium condensed mercury temperature rise above ambient		
At full load (approx.)	28	°C
At no load (approx.)	20	°C
Mounting position	Vertical, base down	
Max. net weight	$\begin{cases} 4.0 \\ 114 \end{cases}$	oz g

HEATING UP TIME

The preferred minimum value of the total valve heating up time can be obtained from the heating and cooling curve on page 6. This shows how the condensed mercury temperature rises above the ambient temperature from the instant of switching on the filament supply.

Under normal conditions, however, cathode current may be drawn when the condensed mercury temperature is approximately within 7°C of the minimum quoted value. (See page 7 and also appropriate section of 'General operational recommendations—thyratrons').

Minimum cathode heating time	5.0s

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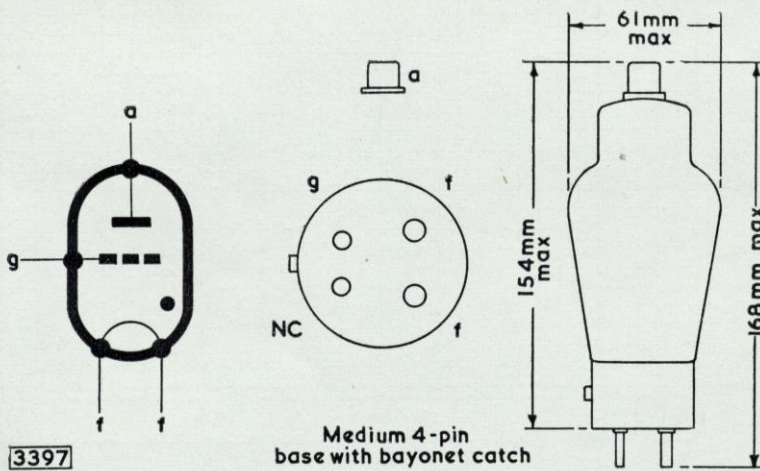industrial control applications.*

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CONTROL CHARACTERISTIC (see page 4)

The shaded area between the curves indicates the spread in characteristics
due to:

(a) Initial differences between individual valves.

(b) Variations in characteristics during life.

(c) Variations in characteristics due to changes in heater voltage.
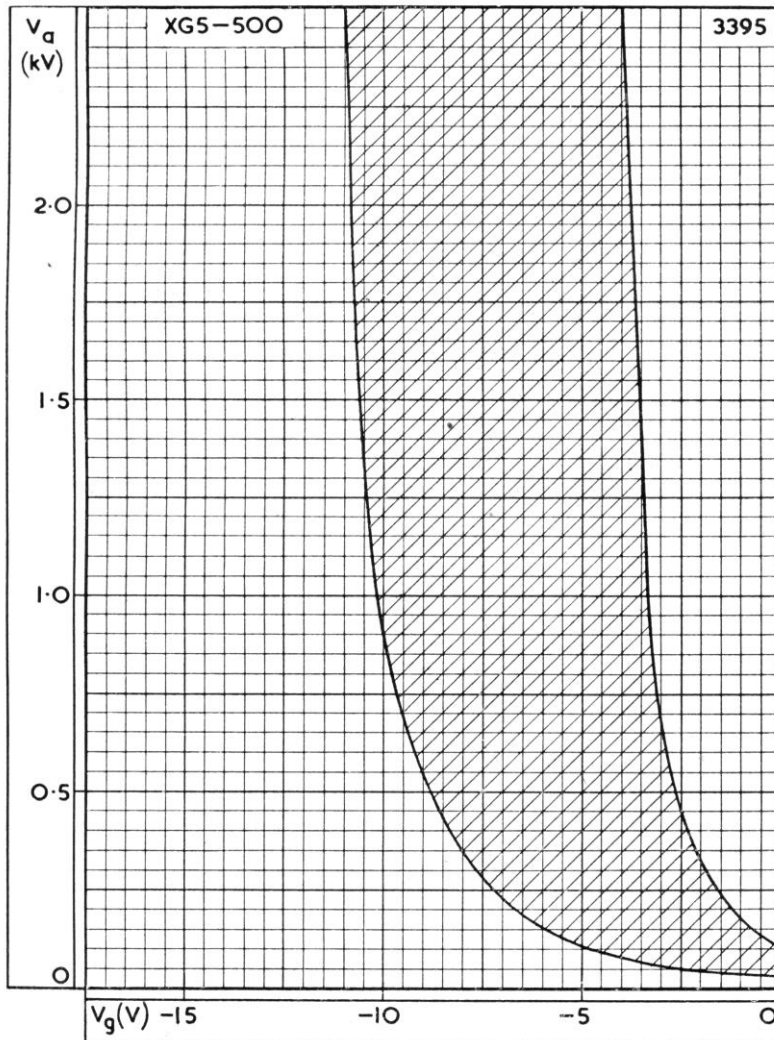
(d) The effects of circuit loading.

The effects of different values of series grid resistor have been ignored.

3397

Medium 4-pin
base with bayonet catch

61mm max

154mm max

168mm max

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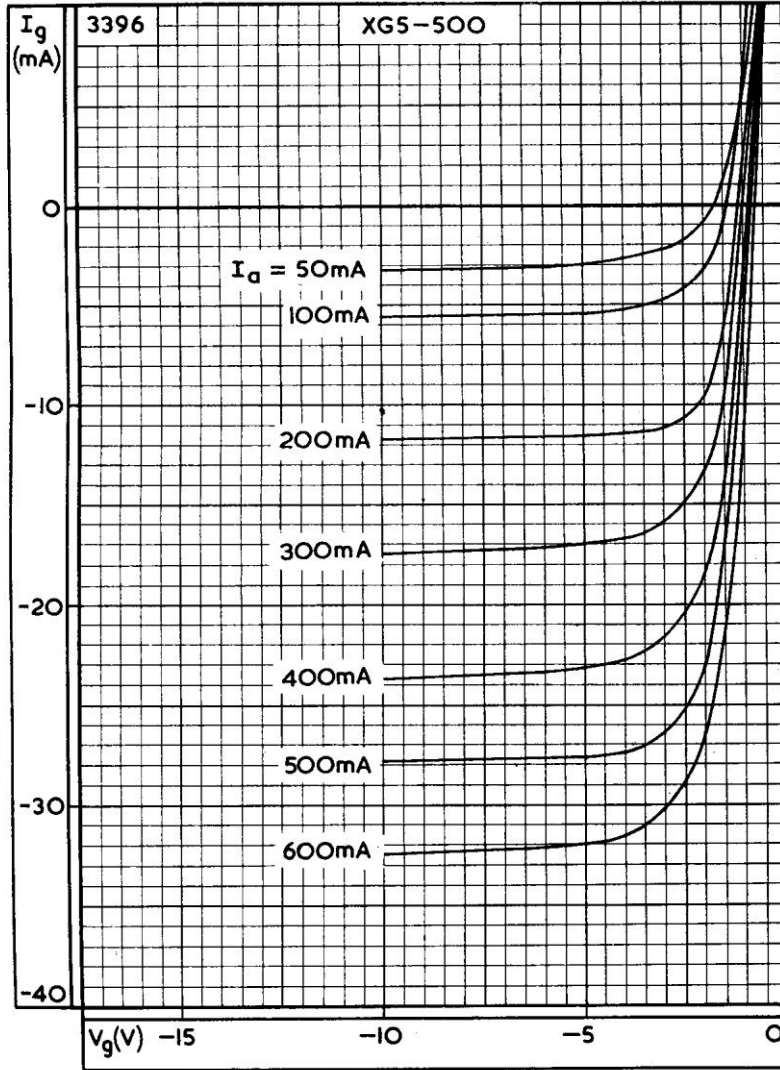
CONTROL CHARACTERISTIC
(See note on page 3)

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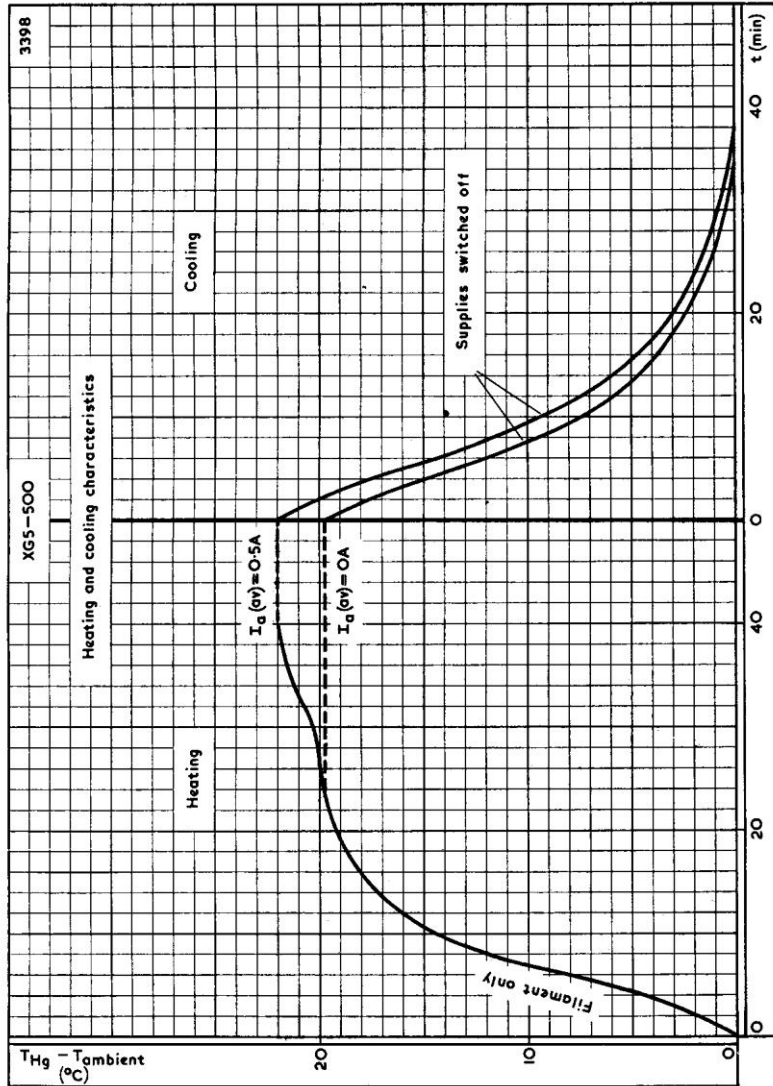
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GRID ION CURRENT CHARACTERISTIC

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HEATING AND COOLING CHARACTERISTICS

Mullard

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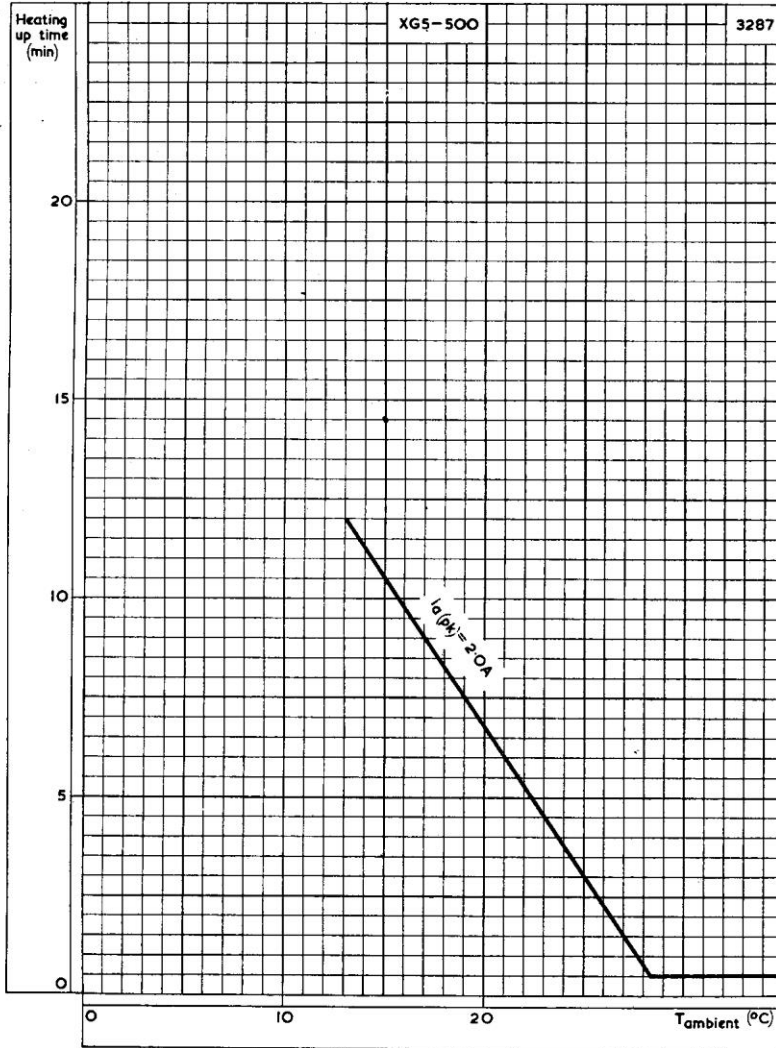
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TOTAL HEATING UP TIME PLOTTED AGAINST AMBIENT TEMPERATURE