

TRIODE THYRATRON

10 amp triode mercury vapour thyatron with negative control characteristic. Primarily designed for use in high voltage rectifier circuits.

XG15-10

PRELIMINARY DATA

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 account in arriving at the actual valve operating conditions.

Max. peak anode voltage			
Inverse	10	15	kV
Forward	10	15	kV
Condensed mercury temperature limits	25 to 65	25 to 60	°C
Max. cathode current			
Peak		45	A
Average (max. averaging time 10s)		10	A
Surge (fault protection max. duration 0.1s)		600	A
Max. peak positive grid voltage		600	V
Max. grid resistor		20	kΩ

CHARACTERISTICS

Electrical

Heater voltage	5.0	V
Max. heater current at 5.0V	20	A
Anode voltage drop	12	V
Max. operating frequency	150	c/s
Recovery (deionisation) time (approx.)	1	ms
Ionisation time (approx)	10	μs

Mechanical

Type of cooling	convection
Mounting position	Vertical, base down
Max. net weight	{ 1.2 kg 42 oz
Equilibrium condensed mercury temperature rise above ambient	
At full load	30 °C
At no load	27 °C



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FULL LOAD OPERATING CONDITIONS (for peak inverse anode voltage of 15kV and a peak cathode current of 45A)

Circuit	No. of valves	Full load d.c. output		Applied a.c. volts (kV _{r.m.s.})	Initial filter elements	
		(kV)	(A)		Lmin. (H)	Cmax. (μF)
Single phase full-wave	2	4.8	20	5.3 (per valve)	0.5	50
Single phase bridge	4	9.6	20	10.6 (total)	1.0	25
Three phase half-wave	3	6.2* (7.2)	30	5.3* (6.1) (per phase)	0.2	25
Three phase full-wave	6	14.4	30	6.1 (per phase)	0.4	10

*These figures take into account the increase in peak inverse voltage which occurs if the power supply is lightly loaded. For operation with a constant load the voltages may be increased to the value shown in brackets.

HEATING UP TIME

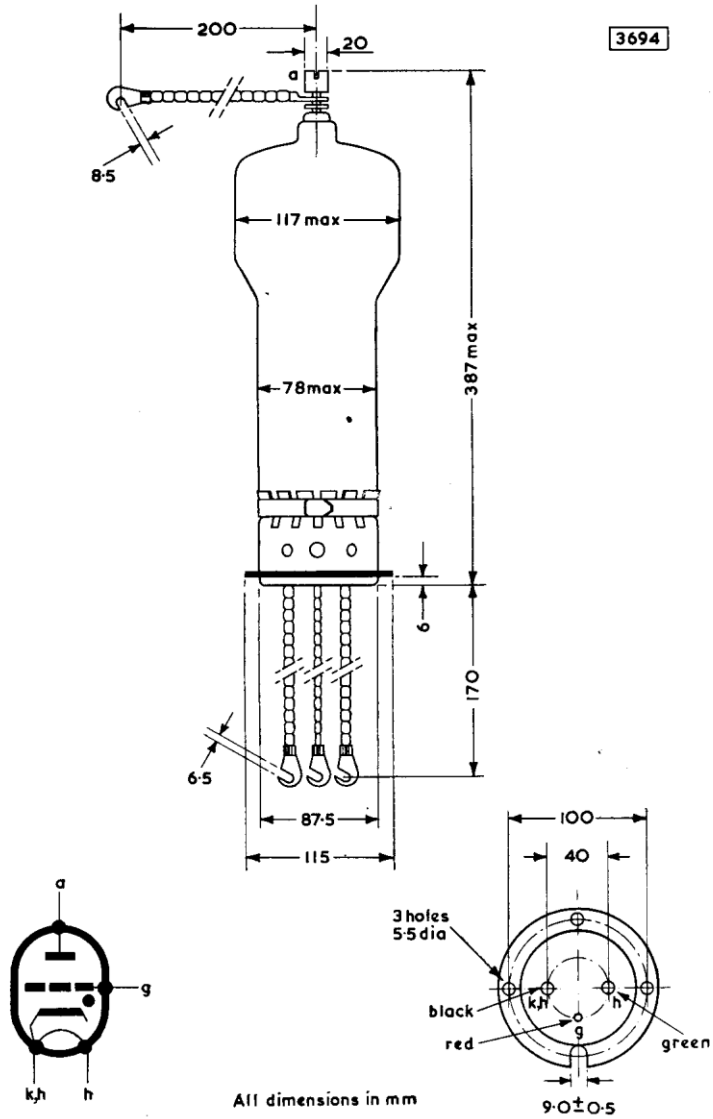
The preferred minimum value of the total valve heating up time can be obtained from the heating curve on page 5. This shows how the condensed mercury temperature rises above ambient temperature from the instant of switching on the heater supply.

Minimum cathode heating time 10 min

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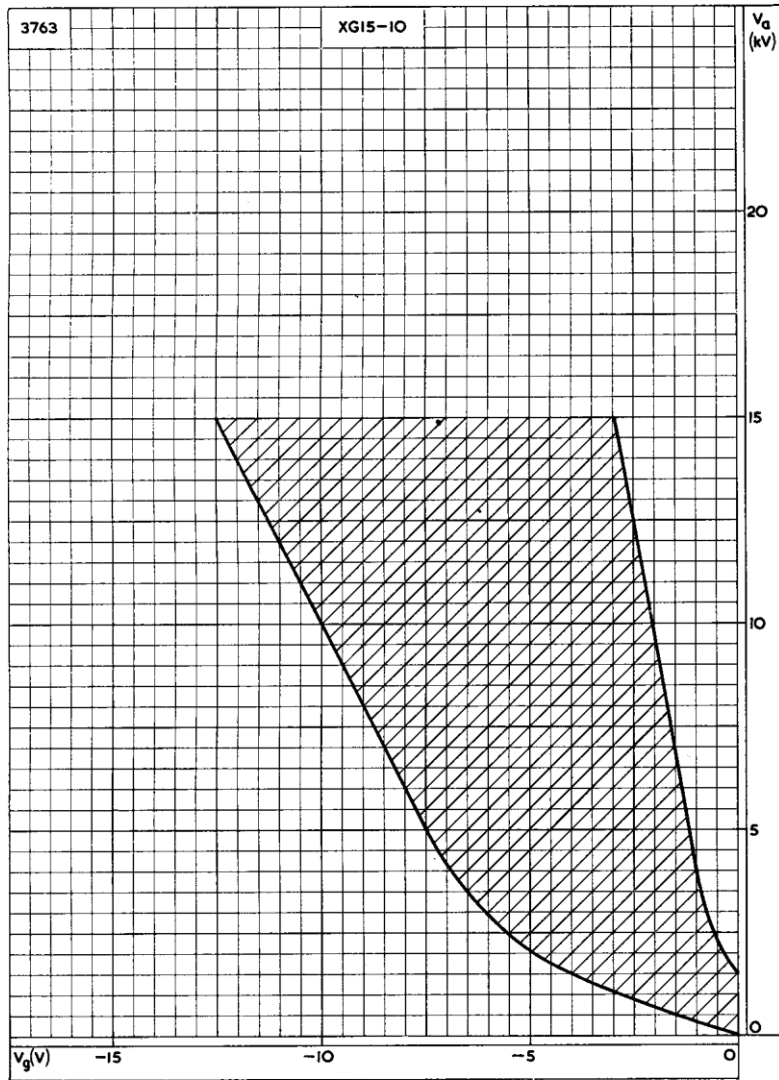
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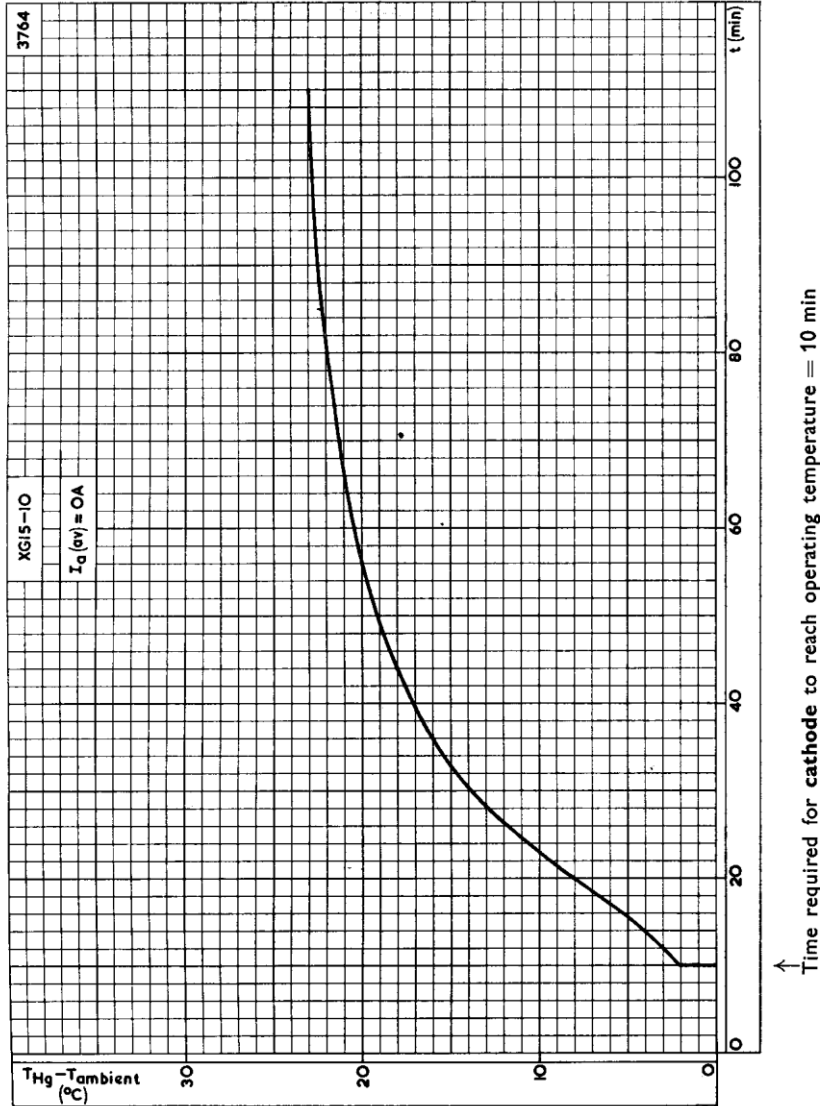


CONTROL CHARACTERISTIC

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HEATING AND COOLING CHARACTERISTIC. EXCESS TEMPERATURE OVER AMBIENT PLOTTED AGAINST TIME