

American Designation 869B

INTRODUCTION

The 869B is a hot cathode Mercury Vapour Rectifier with maximum ratings of 20kV peak inverse voltage and 10A peak current. It will provide a d.c. output of 19kV 7.5A in a three phase full wave circuit.

GENERAL DATA

(See also Preamble to Rectifier Section of this Catalogue)

Electrical

Filament	..	..	..	..	..	..	Oxide Coated
Filament Voltage	..	..	..	..	..	..	5.0 V
Filament Current	..	..	..	..	..	..	19 A
Filament Heating Time	..	..	..	..	..	..	1 Minute
Condensed Mercury Temperature	..	..	..	..	..	..	(See page 2)
Maximum Peak Inverse Voltage	..	..	..	..	..	..	(See page 2)
Maximum Anode Current:							
Peak	..	..	..	..	..	..	(See page 2)
Mean (30 secs Max averaging time)	..	..	..	..	..	..	(See page 2)
Under fault conditions	..	..	..	..	..	..	100 A
(0.1 second Max duration)							

Mechanical

Overall Length..	..	..	..	14.44 inches (366.7 mm)	Max
Overall Diameter	..	..	..	5.125 inches (130.2 mm)	Max
Net Weight	..	..	..	1½ pounds (800 gm)	Approx
Mounting Position	..	..	..	..	Vertical, base down
Cap	..	..	..	..	JEDEC No. C1-9
Base	..	..	..	3-Pin Jumbo	(JEDEC No. A3-20)

CONTROL OF CONDENSED MERCURY TEMPERATURE

On the following pages two curves are given showing:

1. Total heating time for any value of ambient temperature. This is for use when the valve is being switched on from cold.
2. Rise of condensed mercury temperature above ambient plotted against heating and cooling time. This can be used as indicated by the example in the preamble to this section of the catalogue.

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MAXIMUM OPERATING CONDITIONS

(Absolute Values—see Preamble)

Circuit	* Dia- gram	Con- densed Mercury Temp. °C	Peak Inverse Voltage (50-60 c/s) kV	Anode Current in Amperes		Trans- former Secondary Voltage (R.M.S.) kV	Max D.C. Output	
				Peak	Mean†		kV	Amps
Single Phase Full Wave	A	30-40	20	10	2.5	7.0	6.3	5.0
		30-50	15	10	2.5	5.3	4.7	5.0
		30-60	10	10	2.5	3.5	3.1	5.0
Single Phase Full Wave Bridge	B	30-40	20	10	2.5	14.0	12.6	5.0
		30-50	15	10	2.5	10.6	9.5	5.0
		30-60	10	10	2.5	7.0	6.3	5.0
Three Phase Half Wave	C	30-40	20	10	2.5	8.1†	9.5†	7.5
		30-50	15	10	2.5	6.1†	7.1†	7.5
		30-60	10	10	2.5	4.1†	4.7†	7.5
Three Phase Full Wave	D§	30-40	20	10	2.5	8.1	19.0	7.5
		30-50	15	20	5	6.1	14.2	15.0
		30-60	10	20	5	4.1	9.5	15.0

*For diagrams see Typical Rectifier Circuits for Choke Input Filters in the preamble to this section of the catalogue.

†For operation with constant full load. If the load resistance is increased the secondary voltage should be decreased (to avoid excessive peak inverse voltage) until at no load the reduction is 14%. The d.c. output voltage will be correspondingly decreased.

‡Mean anode currents are averaged over any period of 30 seconds maximum.

§With filament and anode supplies out of phase (60°-120°).

X-RAY WARNING

X-rays are produced when the 869B is operated with a peak inverse anode voltage above 16kV (absolute value). These rays can constitute a health hazard unless the valve is adequately shielded for X-ray radiation. This is entirely a function of high voltage devices and does not reflect upon the design of the valve.

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**MERCURY VAPOUR
RECTIFIER**

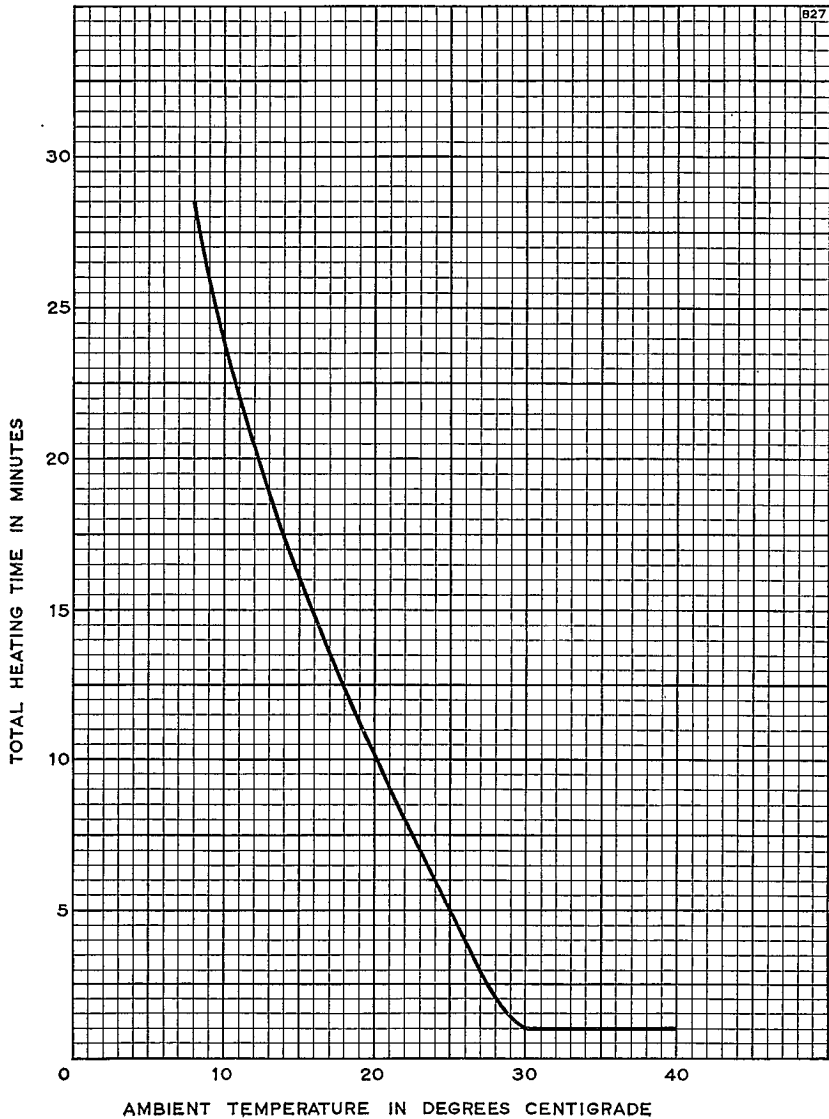
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TOTAL HEATING TIME CHARACTERISTIC



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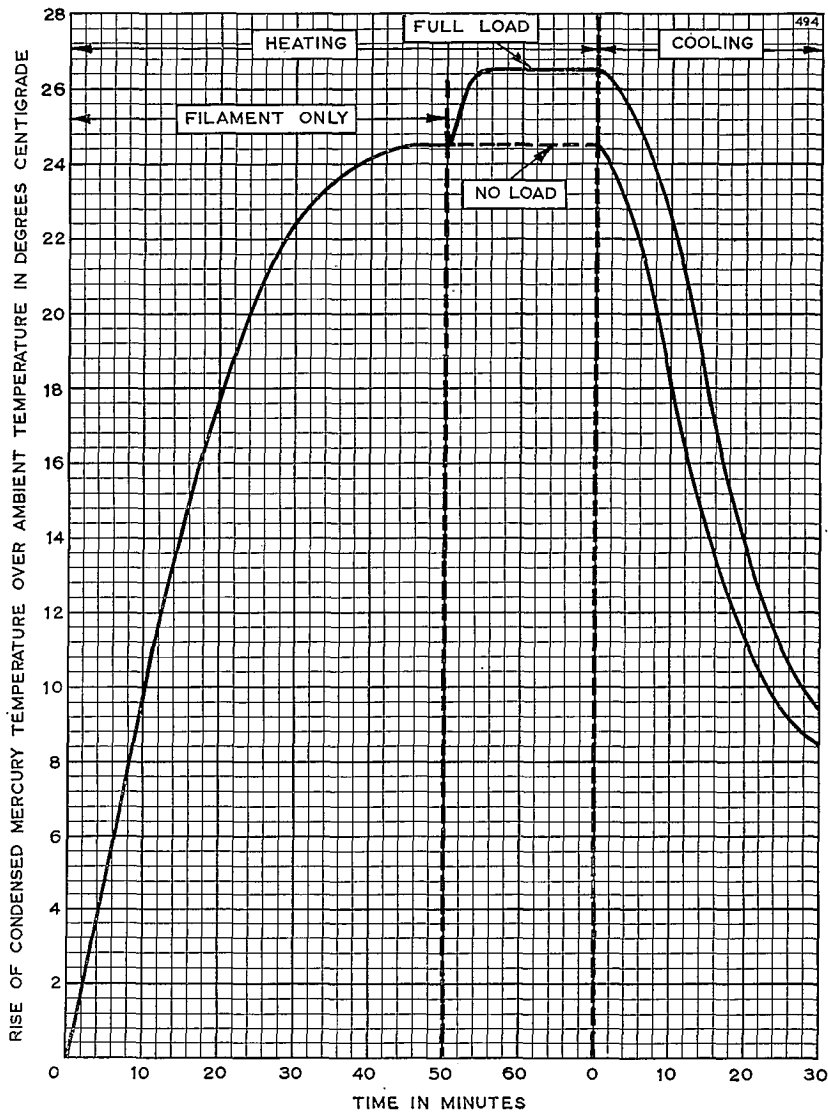
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HEATING AND COOLING CHARACTERISTIC



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MERCURY VAPOUR RECTIFIER

869B

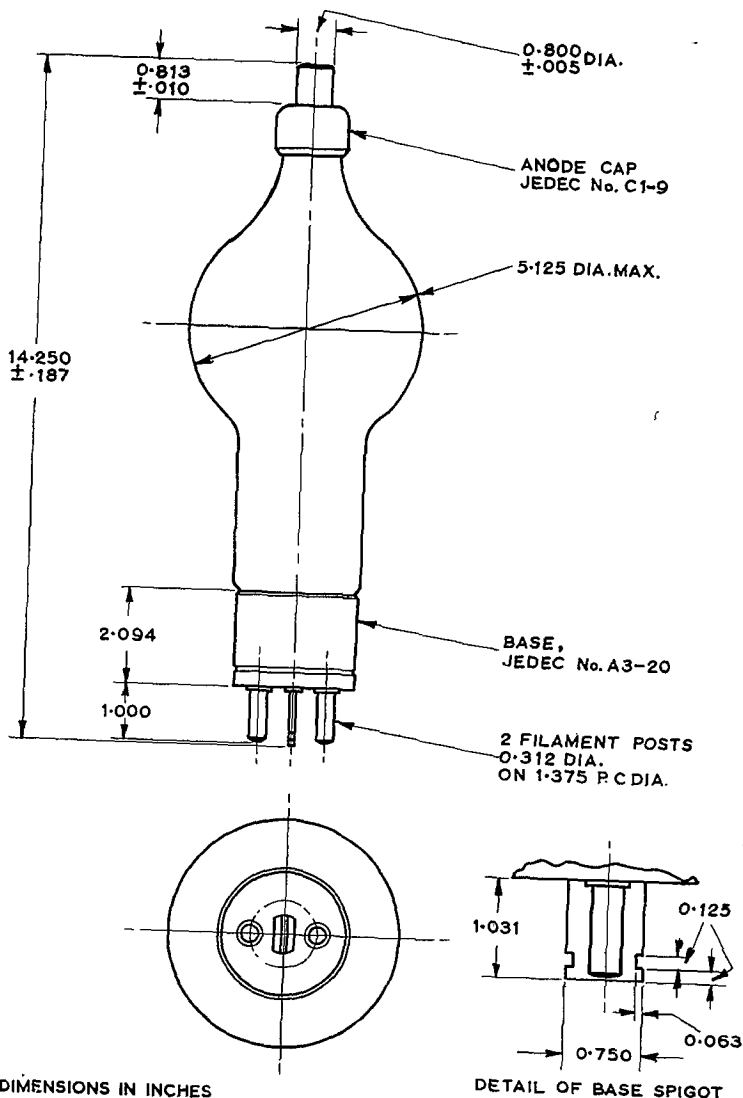
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OUTLINE

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