



# MERCURY VAPOUR RECTIFIER

# AH213

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Service Type CV2723

Electrically Equivalent to American 869B

## INTRODUCTION

The AH213 is a hot cathode Mercury Vapour Rectifier with maximum ratings of 20kV peak inverse voltage and 10A peak current. It is similar to the AH200, differing only in filament rating and in terminal sizes.

## GENERAL DATA

(See also Preamble to Rectifier Section of this catalogue)

### Electrical

|                               |    |    |    |    |    |    |              |              |
|-------------------------------|----|----|----|----|----|----|--------------|--------------|
| Filament                      | .. | .. | .. | .. | .. | .. | ..           | Oxide Coated |
| Filament Voltage              | .. | .. | .. | .. | .. | .. | 5            | V            |
| Filament Current              | .. | .. | .. | .. | .. | .. | 19           | A            |
| Filament Heating Time         | .. | .. | .. | .. | .. | .. | 1            | Minute       |
| Condensed Mercury Temperature | .. | .. | .. | .. | .. | .. | (See page 2) |              |
| Max Peak Inverse Voltage      | .. | .. | .. | .. | .. | .. | (See page 2) |              |
| Max Anode Current:            |    |    |    |    |    |    |              |              |
| Peak                          | .. | .. | .. | .. | .. | .. | (See page 2) |              |
| Mean†                         | .. | .. | .. | .. | .. | .. | (See page 2) |              |
| Under fault conditions        | .. | .. | .. | .. | .. | .. | 100          | A            |
| (0.1 seconds Max duration)    |    |    |    |    |    |    |              |              |

### Mechanical

|                   |    |    |    |             |          |                       |
|-------------------|----|----|----|-------------|----------|-----------------------|
| Overall Length    | .. | .. | .. | 18.0 inches | (457 mm) | Max                   |
| Overall Diameter  | .. | .. | .. | 5.25 inches | (133 mm) | Max                   |
| Net Weight        | .. | .. | .. | 1.75 pounds | (800 gm) | Approx                |
| Mounting Position | .. | .. | .. | ..          | ..       | Vertical, base down   |
| Base              | .. | .. | .. | ..          | ..       | (See outline drawing) |

## 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                             | *<br>Dia-<br>gram | Con-<br>densed<br>Mercury<br>Temp.<br>°C | Peak<br>Inverse<br>Voltage<br>(50-60<br>c/s)<br>kV | Anode<br>Current<br>in Amperes |       | Trans-<br>former<br>Secondary<br>Voltage<br>(R.M.S.)<br>kV | Max<br>D.C. Output |      |
|-------------------------------------|-------------------|------------------------------------------|----------------------------------------------------|--------------------------------|-------|------------------------------------------------------------|--------------------|------|
|                                     |                   |                                          |                                                    | Peak                           | Mean† |                                                            | kV                 | Amps |
| Single Phase<br>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<br>Full Wave<br>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<br>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<br>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°).

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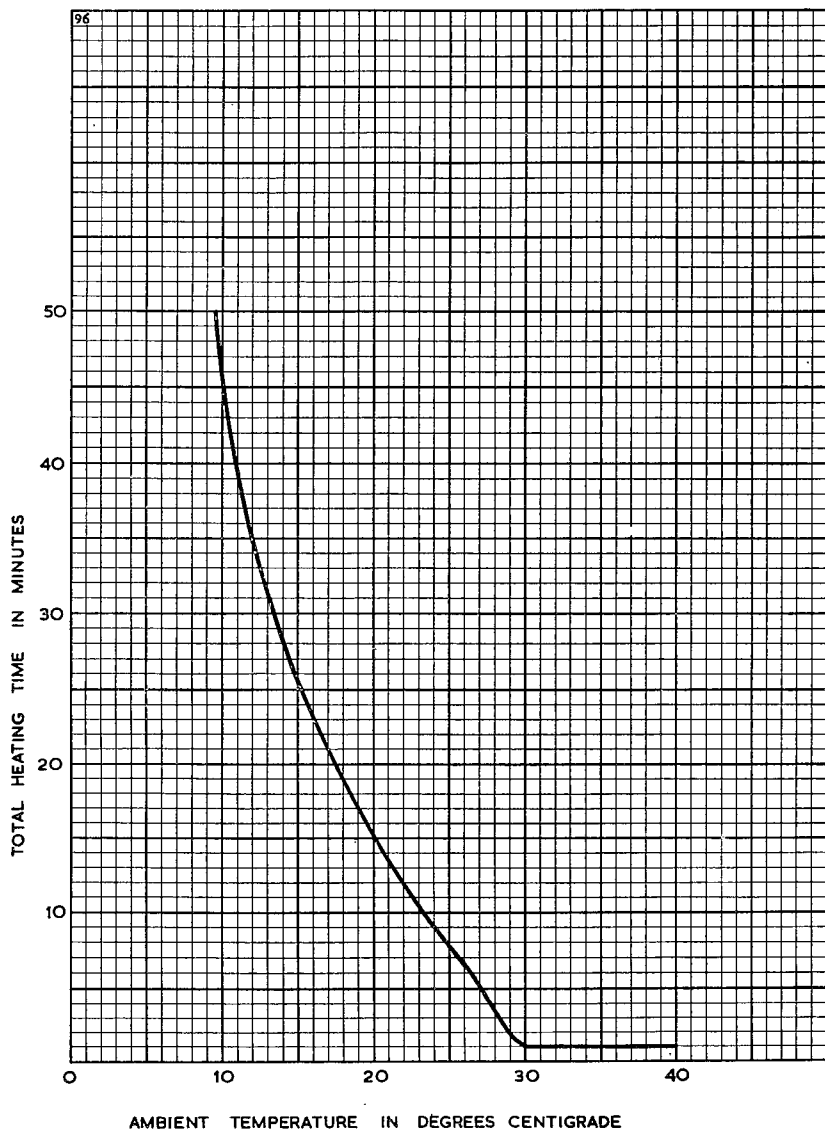


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TOTAL HEATING TIME CHARACTERISTIC



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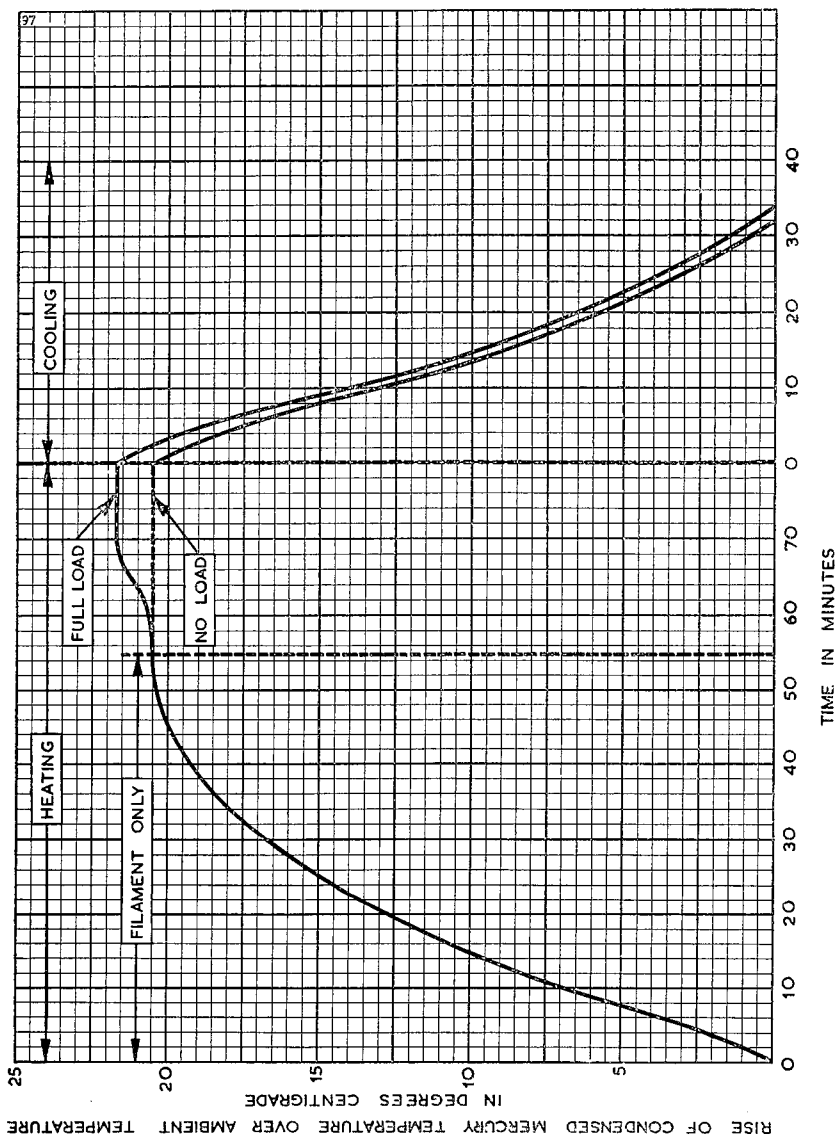


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### HEATING AND COOLING CHARACTERISTIC



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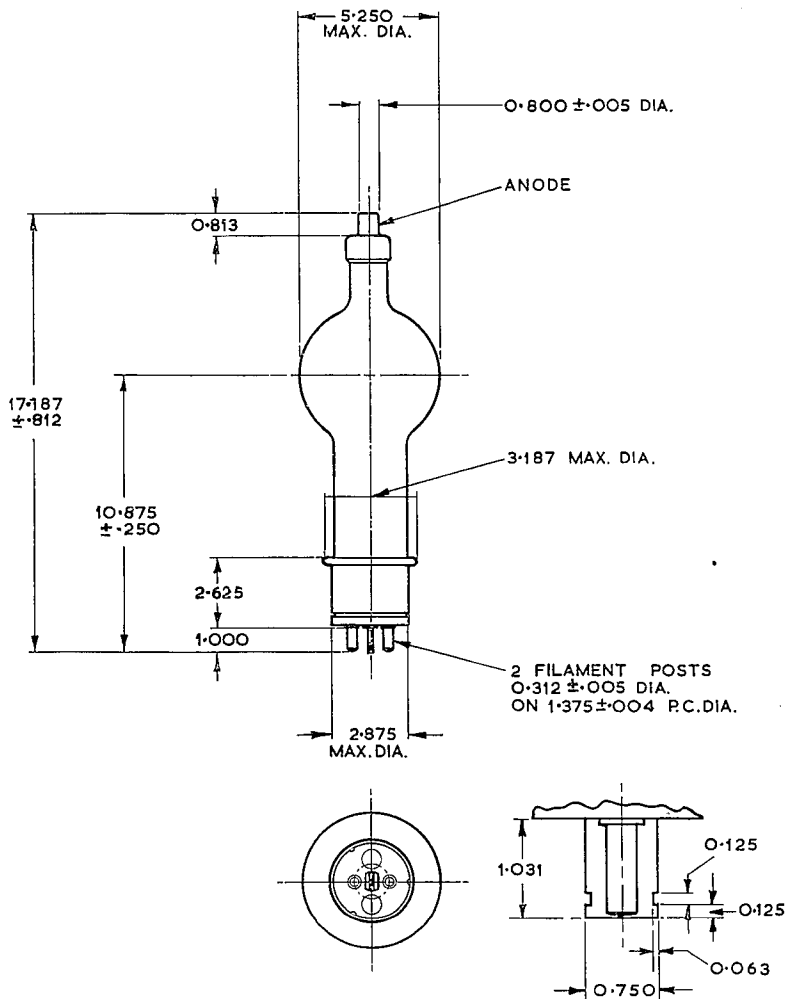
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## OUTLINE

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ALL DIMENSIONS IN INCHES

DETAIL OF BASE SPIGOT