



# MERCURY VAPOUR RECTIFIER

# AH205/857B ←

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Service Type CV2673

American Equivalent 857B

## INTRODUCTION

The AH205/857B is a hot cathode Mercury Vapour Rectifier with maximum ← ratings of 22kV peak inverse voltage and 40A peak current. It will provide a D.C. output of 21kV 30A in a three phase full wave circuit or 7kV 20A in a single 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                     | .. | .. | .. | .. | .. | .. | 30 A         |
| Filament Heating Time                | .. | .. | .. | .. | .. | .. | 1 Minute     |
| Condensed Mercury Temperature        | .. | .. | .. | .. | .. | .. | (See page 2) |
| Max Peak Inverse Voltage             | .. | .. | .. | .. | .. | .. | (See page 2) |
| Max Anode Current:                   |    |    |    |    |    |    |              |
| Peak                                 | .. | .. | .. | .. | .. | .. | 40 A         |
| Mean (30 seconds Max averaging time) | .. | .. | .. | .. | .. | .. | 10 A ←       |
| Under fault conditions               | .. | .. | .. | .. | .. | .. | 400 A        |
| (0·2 seconds Max duration)           |    |    |    |    |    |    |              |

### Mechanical

|                   |    |    |    |              |           |                       |
|-------------------|----|----|----|--------------|-----------|-----------------------|
| Overall Length..  | .. | .. | .. | 19·88 inches | (505 mm)  | Max                   |
| Overall Diameter  | .. | .. | .. | 7·63 inches  | (194 mm)  | Max                   |
| Net Weight        | .. | .. | .. | 4·0 pounds   | ( 1·8 kg) | 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.

← Indicates a change



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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                                    | 22                                                 | 40                             | 10    | 7.7                                                        | 7.0                 | 20   |
|                                     |                   | 25-60                                    | 10                                                 | 40                             | 10    | 3.5                                                        | 3.1                 | 20   |
| Single Phase<br>Full Wave<br>Bridge | B                 | 30-40                                    | 22                                                 | 40                             | 10    | 15.5                                                       | 14.0                | 20   |
|                                     |                   | 25-60                                    | 10                                                 | 40                             | 10    | 7.0                                                        | 6.3                 | 20   |
| Three Phase<br>Half Wave            | C                 | 30-40                                    | 22                                                 | 40                             | 10    | 9.0†                                                       | 10.5†               | 30   |
|                                     |                   | 25-60                                    | 10                                                 | 40                             | 10    | 4.1†                                                       | 4.7†                | 30   |
| Three Phase<br>Full Wave            | D                 | 30-40                                    | 22                                                 | 40                             | 10    | 9.0                                                        | 21.0                | 30   |
|                                     |                   | 25-60                                    | 10                                                 | 40                             | 10    | 4.1                                                        | 9.5                 | 30   |

\*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.

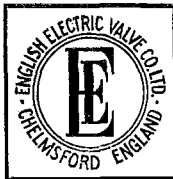
## X-RAY WARNING

X-Rays are produced when the AH205/857B is operated with a peak inverse anode voltage above 16 kV (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.

→ Indicates a change

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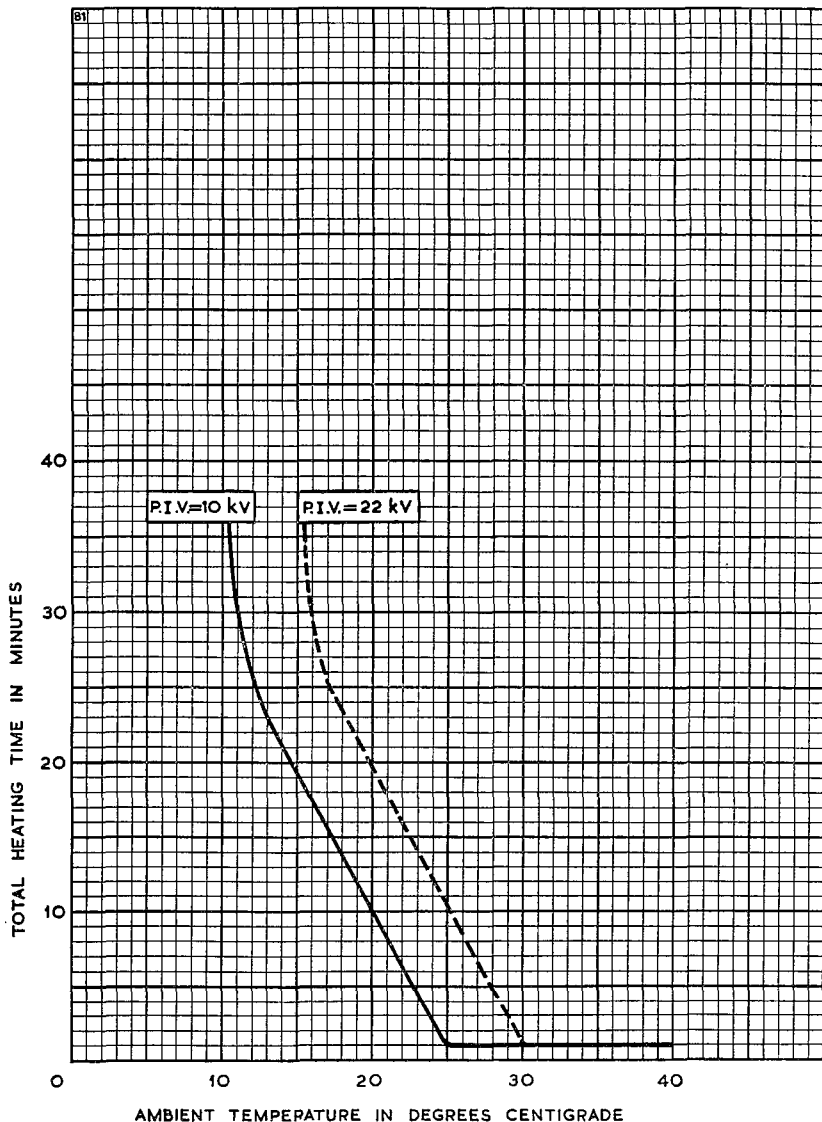


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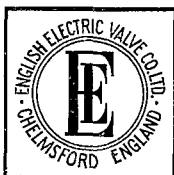
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TOTAL HEATING TIME CHARACTERISTIC



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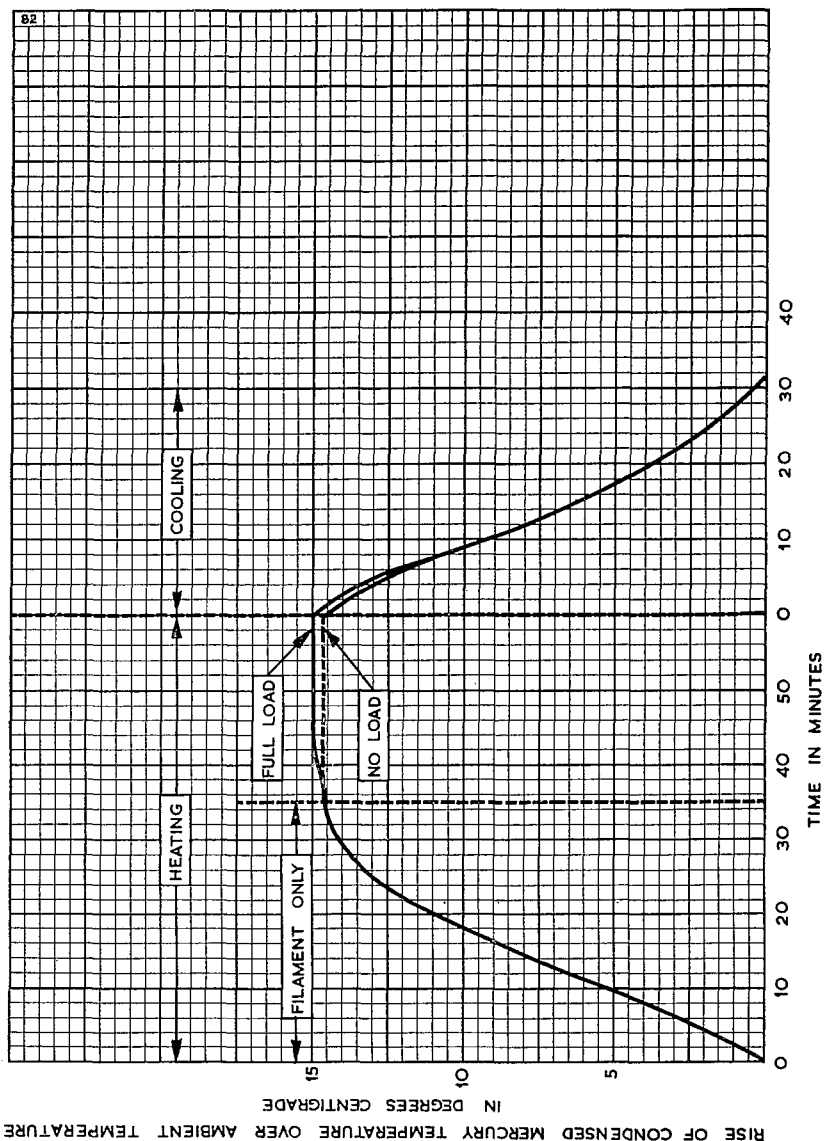


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### HEATING AND COOLING CHARACTERISTIC



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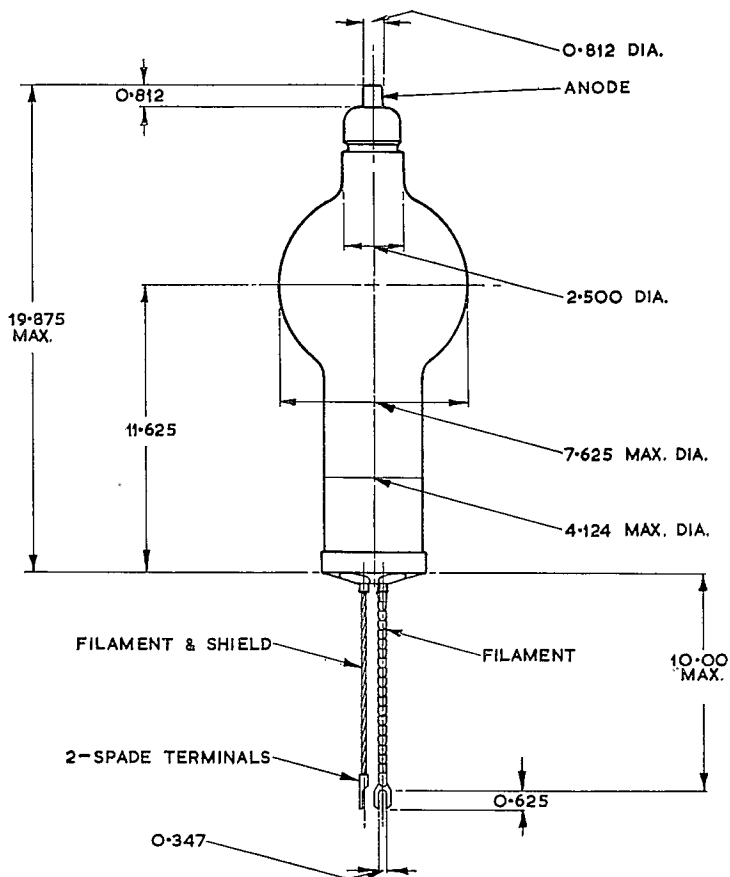
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OUTLINE

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ALL DIMENSIONS IN INCHES

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