

# MERCURY VAPOUR RECTIFIER

# AH238

December 1963

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ENGLISH ELECTRIC

Service Type CV1629

## INTRODUCTION

The AH238 is a hot cathode Mercury Vapour Rectifier with maximum ratings of 13kV peak inverse voltage and 5.0A peak current. It will provide a d.c. output of 12kV 3.7A in a three phase full wave circuit.

## GENERAL DATA

(See also Preamble to Rectifier Section of this catalogue)

### Electrical

|                               |    |    |    |    |    |    |    |              |
|-------------------------------|----|----|----|----|----|----|----|--------------|
| Filament                      | .. | .. | .. | .. | .. | .. | .. | Oxide Coated |
| Filament Voltage              | .. | .. | .. | .. | .. | .. | .. | 4.0 V        |
| Filament Current              | .. | .. | .. | .. | .. | .. | .. | 7.0 A        |
| Filament Heating Time         | .. | .. | .. | .. | .. | .. | .. | 1 Minute     |
| Condensed Mercury Temperature | .. | .. | .. | .. | .. | .. | .. | (See page 2) |
| Max Peak Inverse Voltage      | .. | .. | .. | .. | .. | .. | .. | (See page 2) |
| Max Anode Current:            |    |    |    |    |    |    |    |              |
| Peak                          | .. | .. | .. | .. | .. | .. | .. | 5.0 A        |
| Mean†                         | .. | .. | .. | .. | .. | .. | .. | 1.25 A       |
| Under fault conditions        | .. | .. | .. | .. | .. | .. | .. | 100 A        |
| (0.1 second Max duration)     |    |    |    |    |    |    |    |              |

### Mechanical

|                   |    |    |    |              |          |                                                    |
|-------------------|----|----|----|--------------|----------|----------------------------------------------------|
| Overall Length    | .. | .. | .. | 9.488 inches | (241mm)  | Max←                                               |
| Overall Diameter  | .. | .. | .. | 2.312 inches | (58.7mm) | Max←                                               |
| Net Weight        | .. | .. | .. | 7 ounces     | (200gm)  | Approx                                             |
| Mounting Position | .. | .. | .. | ..           | ..       | Vertical, base down                                |
| Base              | .. | .. | .. | ..           | ..       | Goliath Edison Screw                               |
| Top Cap           | .. | .. | .. | ..           | ..       | B.S.448/CT9 fitted with←<br>screw terminal adaptor |

## 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                 | A    |
| Single Phase<br>Full Wave           | A                 | 25-55                                    | 13                                                 | 5                              | 1.25  | 4.5                                                        | 4.1                | 2.5  |
|                                     |                   | 25-60                                    | 10                                                 | 5                              | 1.25  | 3.5                                                        | 3.1                | 2.5  |
|                                     |                   | 25-65                                    | 8                                                  | 5                              | 1.25  | 2.8                                                        | 2.5                | 2.5  |
| Single Phase<br>Full Wave<br>Bridge | B                 | 25-55                                    | 13                                                 | 5                              | 1.25  | 9.1                                                        | 8.2                | 2.5  |
|                                     |                   | 25-60                                    | 10                                                 | 5                              | 1.25  | 7.0                                                        | 6.3                | 2.5  |
|                                     |                   | 25-65                                    | 8                                                  | 5                              | 1.25  | 5.6                                                        | 5.0                | 2.5  |
| Three Phase<br>Half Wave            | C                 | 25-55                                    | 13                                                 | 5                              | 1.25  | 5.3†                                                       | 6.2†               | 3.75 |
|                                     |                   | 25-60                                    | 10                                                 | 5                              | 1.25  | 4.1†                                                       | 4.7†               | 3.75 |
|                                     |                   | 25-65                                    | 8                                                  | 5                              | 1.25  | 3.2†                                                       | 3.7†               | 3.75 |
| Three Phase<br>Full Wave            | D                 | 25-55                                    | 13                                                 | 5                              | 1.25  | 5.3                                                        | 12.4               | 3.75 |
|                                     |                   | 25-60                                    | 10                                                 | 5                              | 1.25  | 4.1                                                        | 9.5                | 3.75 |
|                                     |                   | 25-65                                    | 8                                                  | 5                              | 1.25  | 3.2                                                        | 7.5                | 3.75 |

\*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 15 seconds maximum.

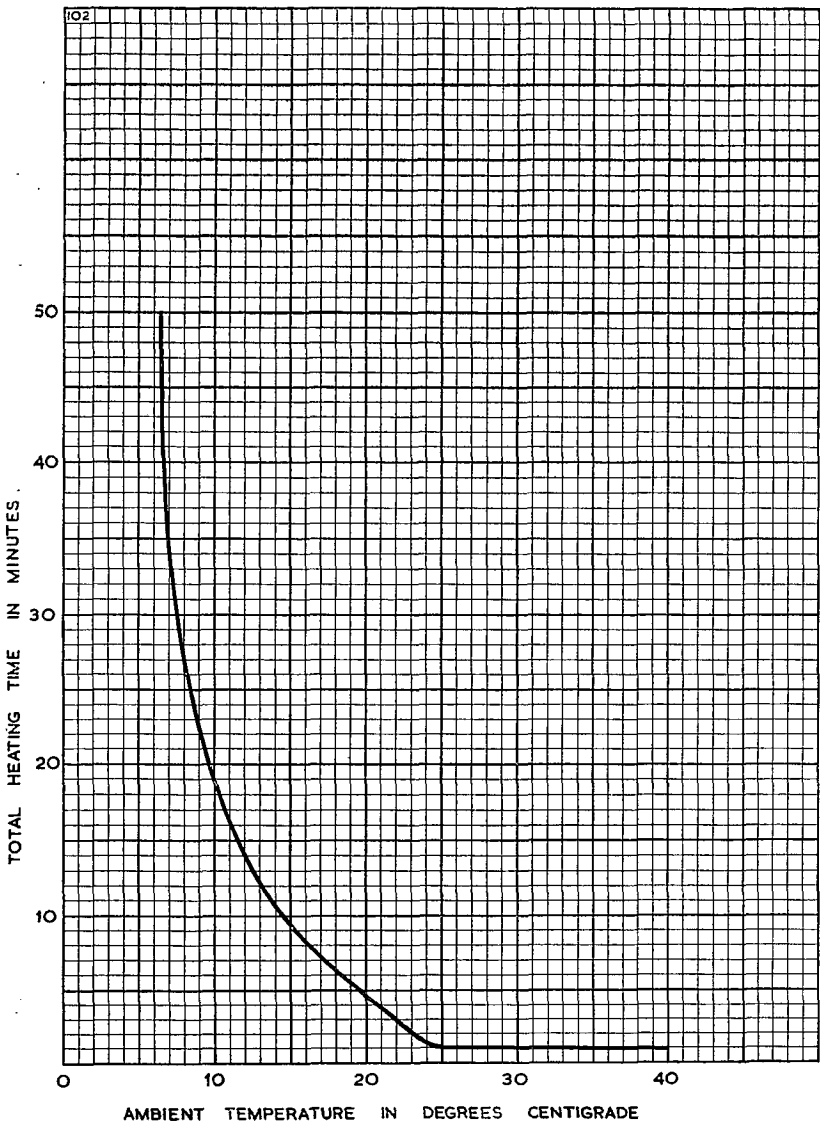
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TOTAL HEATING TIME CHARACTERISTIC

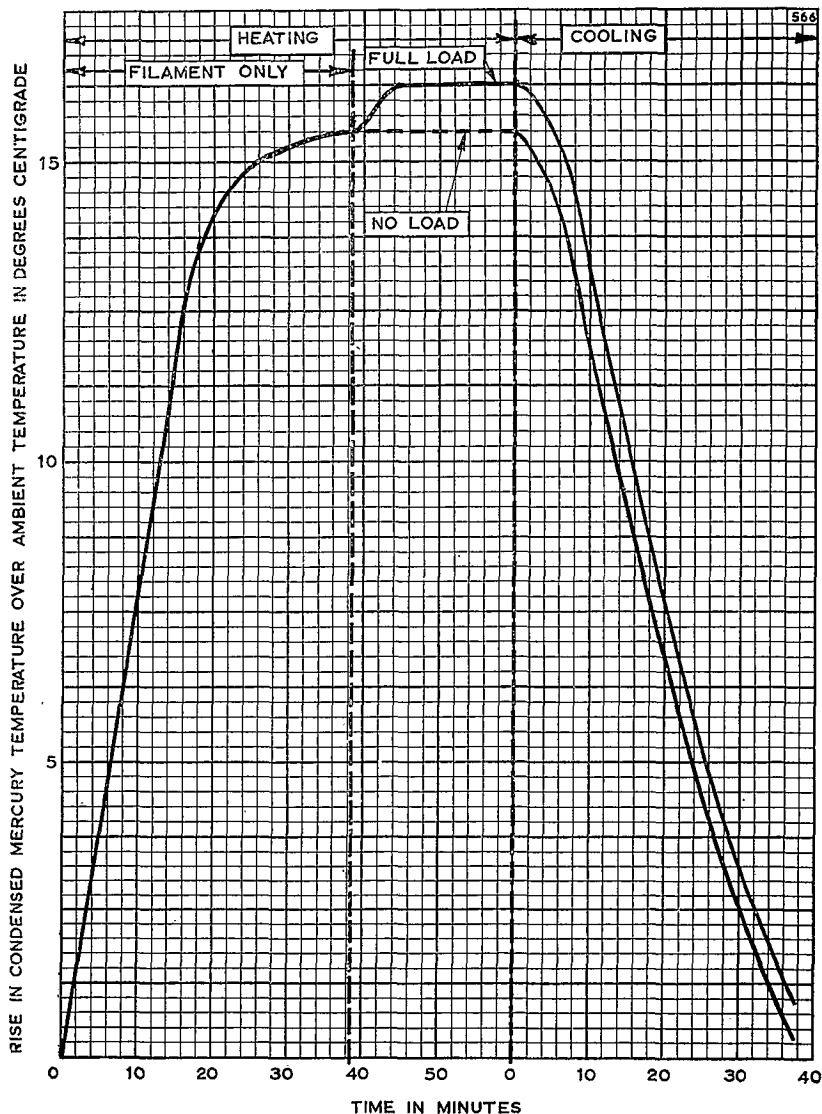


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**HEATING AND COOLING CHARACTERISTIC**



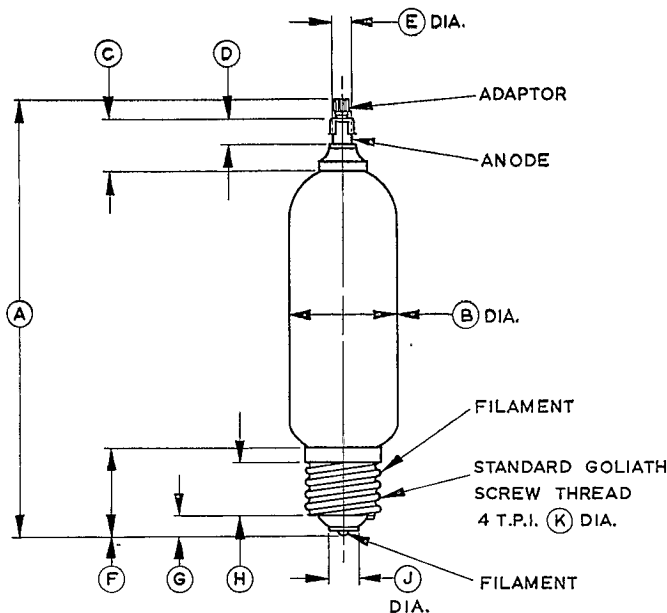
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### OUTLINE

104C



| Ref. | Inches            | Millimetres       |
|------|-------------------|-------------------|
| A    | 9.488 Max         | 241 Max           |
| B    | 2.312 Max         | 58.72 Max         |
| C    | 1.062             | 26.97             |
| D    | 0.593             | 15.06             |
| E    | $0.375 \pm 0.002$ | $9.525 \pm 0.051$ |
| F    | $1.811 \pm 0.040$ | $46.00 \pm 1.02$  |
| G    | $0.355 \pm 0.040$ | $9.02 \pm 1.02$   |
| H    | 1.180             | 29.97             |
| J    | $0.630 \pm 0.079$ | $16.00 \pm 2.01$  |
| K    | $1.546 \pm 0.009$ | $39.27 \pm 0.23$  |

Millimetre dimensions have been derived from inches.