



## Rectifier Type AH 201

**General.** The Type AH 201 valve is a hot-cathode mercury-vapour rectifier incorporating a domed anode and a shrouded cathode in a hard glass bulb. It is suitable for the supply of rectified currents up to 0.75 A at 10 kV depending upon the type of circuit used.

For most applications it is recommended that air-blast cooling should be used. The air blast should be directed against the bottom portion of the valve only. Further details are given below.

The filament may be switched on in one operation. The conditioning schedule, which should be performed after transit or storage, consists of a run at normal filament voltage for one hour, no anode voltage or air blast being applied during this time.

The valve must always be shielded from draughts, though no close-fitting tube may be used except under conditions of continuous air blast.

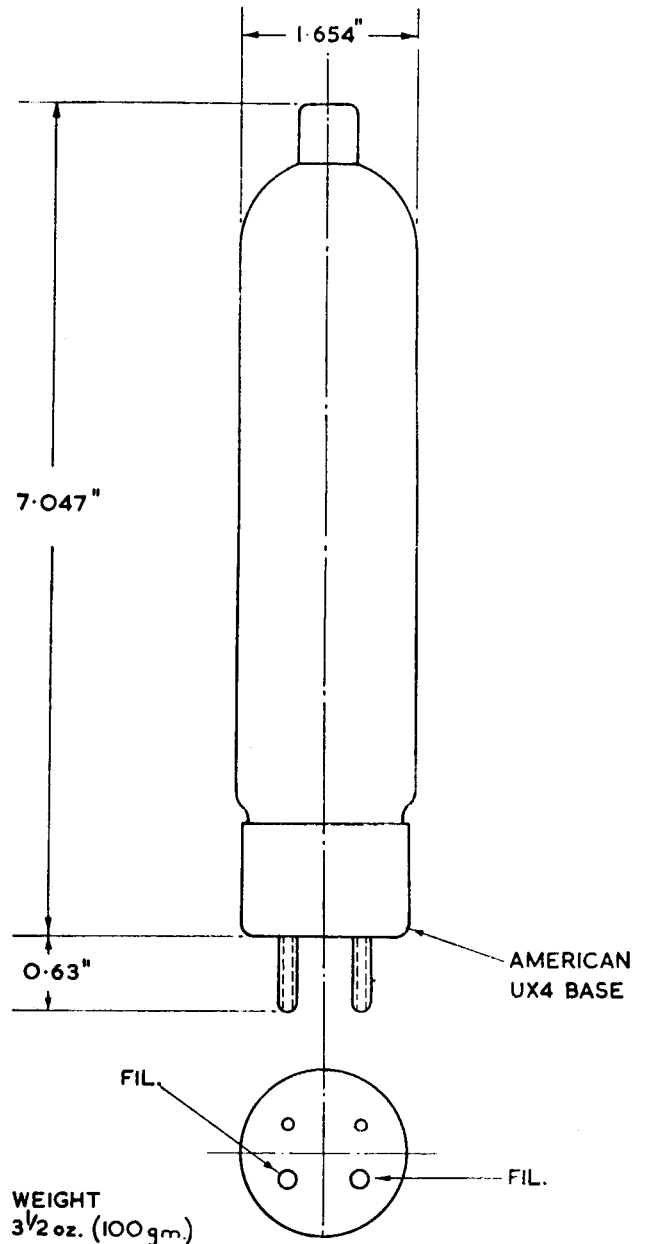
### Conditions of Operation

#### (a) *In Still Air.*

The ambient air temperature should be measured with an alcohol thermometer, the bulb of which is placed  $\frac{1}{2}$  in. above the top of the filament cap, and distant 6 in. from it. Full output may be taken from the AH 201 rectifier if the ambient air temperature is between 12°C and 34°C provided that the pre-heating times given below are adhered to. If the valve is operated outside the given temperature limits, erratic operation and shortened life will result.

#### (b) *With Forced Air Blast at Ambient Air Temperature on the Base of the Valve.*

With forced air-cooling at ambient temperature the limits of air blast temperature are 26°C to 50°C. This temperature should be measured with a thermometer in the air blast.



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(c) *With Thermostatically Switched Forced Air Blast at Ambient Air Temperature.*

The air blast is best thermostatically controlled so that the blower is switched on at an ambient temperature of 30°C. Then for lower temperatures the valve runs in still air and for higher temperatures with forced air blast at ambient temperature. The range of temperatures over which the valve will operate in this way will thus be from 12°C to 50°C. In the event of the ambient temperature falling below the minimum temperature of 12°C heated air must be used.

#### Recommended Method of Applying Air Blast

A horizontal tube of  $\frac{1}{4}$  in. diameter, placed with its end  $\frac{1}{2}$  in. above the level of the top of the filament cap, and delivering air at a pressure of  $\frac{1}{2}$  in. water gauge will give the necessary temperature control. The air tube should have at least a 3-in. length of insulating material included in it to avoid danger of flash-over between the filament cap connections and earth.

#### Tables of Pre-heating Times for Filaments

The mercury condensation temperature is raised approximately 15°C above the ambient temperature by the power dissipated in the cathode.

The pre-heating time required before the condensation temperature rises to its working value is set out in the following table. No anode potential must be applied before this time has elapsed.

**TABLE 1.** To be used when the valve is operated under conditions (a) or (c).

| Ambient Temperature °C | Pre-heating Time (Minutes) |
|------------------------|----------------------------|
| 26                     | 1                          |
| 25                     | 4                          |
| 20                     | 11                         |
| 15                     | 20                         |
| 12                     | 34                         |

**TABLE 2.** When conditions are as in (b).

|       |   |
|-------|---|
| 26-50 | 1 |
|-------|---|

#### APPROXIMATE DATA

|                  |               |    |
|------------------|---------------|----|
| $V_f$            | $2.5 \pm 0.1$ | V  |
| $I_f$            | 5             | A  |
| PIV (max)        | 11            | kV |
| $I_a$ (pk) (max) | 1             | A  |
| $I_a$ (av) (max) | 0.25          | A  |
| TH <sub>g</sub>  | 26-50         | °C |

#### Maximum Outputs

|                       |      |    |
|-----------------------|------|----|
| (1) 3-phase half-wave |      |    |
| $V_{dc}$ (max)        | 5    | kV |
| $I_{dc}$ (max)        | 0.75 | A  |
| (2) 3-phase full-wave |      |    |
| $V_{dc}$ (max)        | 10   | kV |
| $I_{dc}$ (max)        | 0.75 | A  |

#### NOTES

1. With conditions of operation as in (b) or (c) the power supply to the blowers must be switched simultaneously with the filaments.
2. The valve must be screened against RF fields.
3. If a large smoothing condenser is used, care should be taken not to exceed the peak permissible anode current.