Rectifier *Type AH 200*

General. The Type AH 200 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 10 A at 15 kV depending upon the type of circuit used. The AH 200 valve should be operated with air blast (see details below). Care should be taken not to cool the anode portion of the valve, as this valve should be operated with the top of the bulb hot.

The cathode may be switched on in one operation. The ageing schedule (to be applied after transit or storage) is one hour at normal filament voltage, but with no anode voltage or air blast applied. The valve must always be shielded from draughts, though air circulation around the valve must not be impeded.

Conditions of Operation

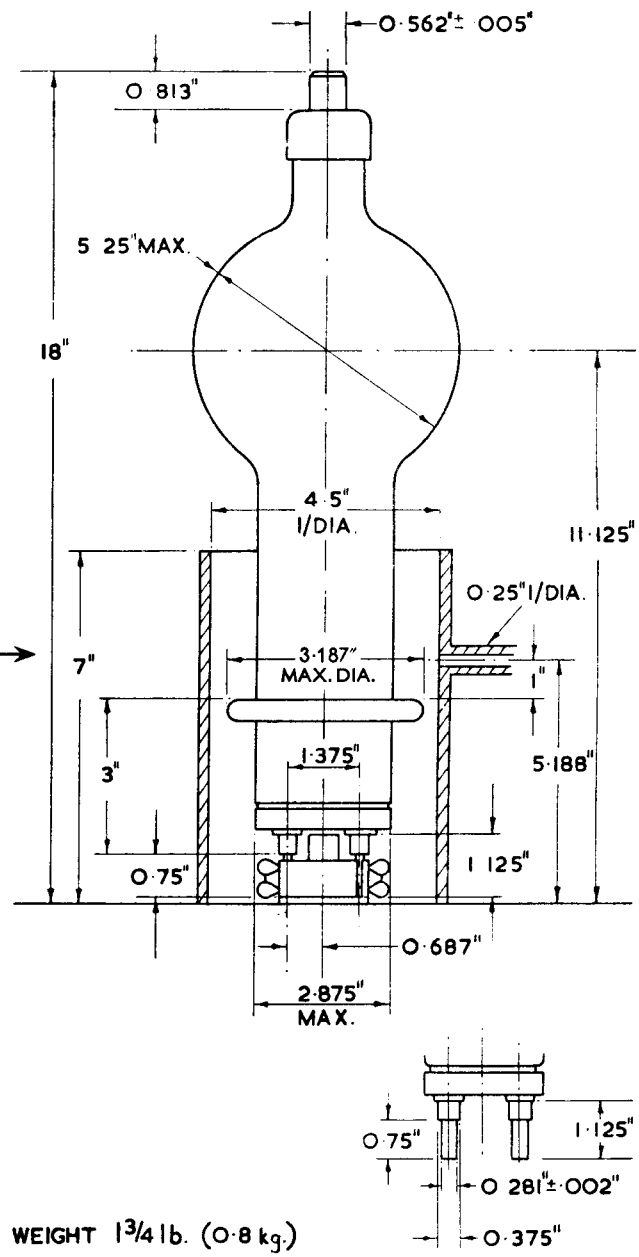
(a) *Continuous Air Blast at a Constant Temperature.*

With this arrangement the blower is operating continuously, and an air heater is switched on and off by a thermostat in the air supply to the valve, thus maintaining a constant temperature. It is imperative that the tube be fitted round the lower half of the valve as shown in the outline drawing. The optimum blast temperature is between 35°C and 40°C.

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

As an alternative to the above arrangement, the air blast may be switched on and off by a thermostat which measures the ambient air temperature on a level with the top of the base of the valve, and 6 in. away from it.

The blower must be switched off between 5°C and 22°C, and must be on between 22°C and 40°C. The valve must never be operated when the ambient temperature is below 3°C. When operating under these conditions, no tube may be fitted round the valve, nor must any other obstruction be allowed to impede the free air circulation round the valve.



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Recommended Method of Applying Air Blast

For both the above conditions of operation it is best to use a $\frac{1}{4}$-in. bore air pipe delivering air at a pressure of $\frac{1}{2}$ in. The air tube should include a section of insulating material at least 12 in. long to avoid the danger of a flash-over between the filament cap and earth.

Tables of Pre-heating Times for Filaments

The mercury condensation temperature is raised approximately 20°C above the ambient temperature in free air 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 may be applied before this time has elapsed.

This table is applicable when either of the recommended types of air blast is used. The power supplied to the blower (and heater, if any) should be switched simultaneously with the filament supply.

Ambient Temperature (°C)	Pre-heating Time (Minutes)
20 or over	2
15 or over	14
10 or over	20
5 or over	30

APPROXIMATE DATA

V_f	2·5 V (+0·2 V, −0 V)			
I_f			40	A (a)
PIV (max)			16	kV
$I_{a\ (pk)\ (max)}$	8	A (b)	14	A (c)
$I_{a\ (av)\ (max)}$	2	A (b)	3·5	A (c)
T_{Hg}			25–45°C	

Maximum Outputs

(1) 3-phase half-wave

$V_{dc\ (max)}$	7·5	kV		
$I_{dc\ (max)}$	5·5	A (b)	10	A (c)

(2) 3-phase full-wave

$V_{dc\ (max)}$	15	kV		
$I_{dc\ (max)}$	5·5	A (b)	10	A (c)

NOTES

1. The valve must be screened against RF fields.
2. If a large smoothing capacitor is used, care should be taken not to exceed the maximum peak anode current.
3. Care must be taken to see that there is no condensation around the anode seal.

(a) The filament transformer should be rated for 50A.

(b) Filament voltage in phase with anode current.

(c) Filament voltage 60–120° out of phase with anode current.

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