



Rectifying Valve *Type GU 20/21*

General. The GU 20/21 is a directly heated half-wave mercury-vapour diode intended for use as a power rectifier.

Cooling. The condensation temperature is the limiting factor. The range quoted is the temperature at that part of the bulb where the mercury collects.

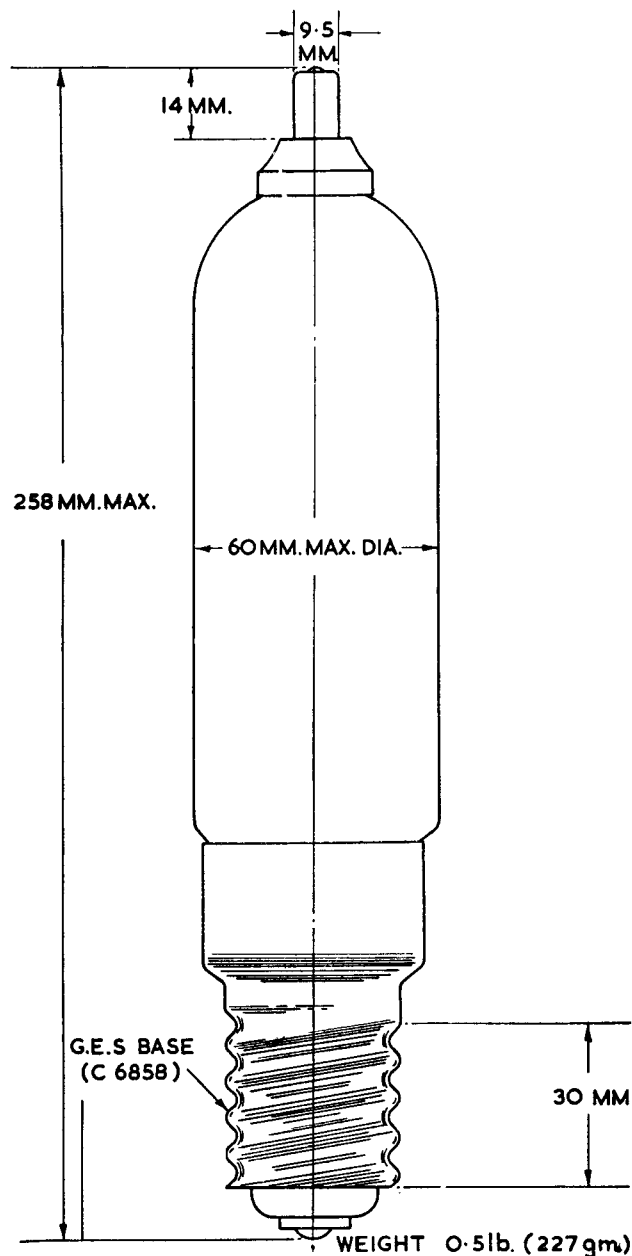
The temperature gradient should be arranged so that the coolest part of the bulb is at the base. The ambient temperature in still air should not exceed 35°C. If air-blast is used, the temperature may be raised to 60°C, the temperature being recorded on a thermometer suspended 6 in. from the valve and with its bulb level with the top of the filament cap.

HT Switching. In order that the filament may attain working temperature and that the condensation temperature may be within the rated limits, there must be a time delay between switching on the filament and applying the anode voltage.

The delay depends on the ambient temperature as follows:

Ambient temperature (°C)	Minimum delay time (minutes)
20	1
18	2
16	4
14	6
12	7
10	8
8	9
6	10

Delay time on restarting after valve has been shut down for a short time may be 1 minute, provided that the condensation temperature has not fallen below 20°C.



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Mounting. The valves must be mounted vertically with anode cap uppermost. This position must be maintained during storage and transit in order to prevent mercury being deposited on the filament or anode.

Seasoning. Whenever a new valve is put into service or when a valve has been transported or stored, the filament must be run for at least 30 minutes at normal voltage before anode voltage is applied.

APPROXIMATE DATA

V_f	4	V
I_f	11	A
PIV _(max)	13	kV
$I_{k(pk)} (max)$	5	A
$I_k (max)$ (averaged over 15 secs.)	1.25	A
T_{Hg}	20 to 60°C	

OPERATING DATA

Circuit	No. of Valves	Output Voltage kV	Output Current A
Bi-phase half-wave	2	4	2.5
Single-phase full-wave	4	8	2.5
Three-phase half-wave	3	5.3	3.75
Three-phase full-wave	6	12.4	3.75
Double three-phase inter- connected	6	5.3	7.5

These values assume that the smoothing circuit is so designed that the ratio of peak to mean cathode current does not exceed 4 to 1.