Velocity Modulated Oscillator
V230A/1K (CV234)

This is a velocity modulated oscillator of the coaxial line type for CW operation within the wave range 8.9 cm. to 11 cm. and 8 cm. to 16 cm.

CATHODE.
Indirectly-heated oxide-coated.
Voltage 6.3 V
Nominal current (AC frequencies above 60 c/s must not be used) 0.3 A

DIMENSIONS.
Maximum overall length 81 mm.
Maximum bulb diameter 20.1 mm.
Base Miniature 7 pin button
Net weight 22½ g.

MAXIMUM RATINGS.
The mean input power to all electrodes other than the heater must not exceed 15 W
The maximum direct cathode current 65 mA
Maximum direct screen voltage 200 V

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OPERATING CONDITIONS.

Oscillator 8.9 to 11 cm. See Fig. 1.

<table>
<thead>
<tr>
<th>Grid voltage $V_{g1}$</th>
<th>0 to 200 V negative with respect to cathode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resonator voltage $V_r$</td>
<td>At 9.1 cm. $250V \pm 5%$. For other wavelengths the $V_r$ is approximately proportional to the square of the frequency</td>
</tr>
<tr>
<td>Screen voltage $V_{g2}$</td>
<td>0 to $V_r$</td>
</tr>
<tr>
<td>Anode voltage $V_a$</td>
<td>$V_r$ plus 10 to 20 V</td>
</tr>
<tr>
<td>Output power</td>
<td>Not less than 0.3 W at the ends of the band with 15 W input</td>
</tr>
</tbody>
</table>

The output may be controlled by either $V_{g1}$ or $V_{g2}$. It is usually desirable to set $V_{g1}$ to zero voltage and adjust $V_{g2}$ by means of a potentiometer across the resonator supply.

Oscillator over at least an octave, approximately 8-16 cm.
See Fig. 2.

<table>
<thead>
<tr>
<th>Grid voltage $V_{g1}$</th>
<th>0 to 200 V negative with respect to cathode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resonator voltage $V_r$</td>
<td>At 15 cm. $100V \pm 5%$. For other wavelengths the $V_r$ is approximately proportional to the square of the frequency</td>
</tr>
<tr>
<td>Screen voltage $V_{g2}$</td>
<td>0 to $V_r$</td>
</tr>
<tr>
<td>Anode voltage $V_a$</td>
<td>$V_r$ plus 10 to 20 V</td>
</tr>
<tr>
<td>Output power</td>
<td>Not less than 0.4 W in the middle of the band</td>
</tr>
</tbody>
</table>

The output may be controlled by either $V_{g1}$ or $V_{g2}$ as for 8.9 to 11 cm. operation.

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PULSE OPERATION.
The valve may be operated with 10% duty cycle giving peak power output of the same values as for CW operation. The delay time for optimum voltage will be approximately 1 microsecond.

MAGNET AND MAGNET ALIGNMENT.
The magnet recommended is Jessops type 10512 but any magnet giving a uniform field of about 1200 oersteds over a 22 mm. gap may be used. The valve must be accurately aligned in the magnetic field so that as much of the current as possible reaches the anode. Once aligned no further adjustment will be necessary when replacing valves.

CIRCUITS.
Two circuits suitable for use with this valve are shown in Fig. 1 and 2. The position of the output probe is of importance.

Circuit Fig. 1 is a rhubatron cavity with micrometer screw for wavelength adjustment. Wavelength 8.9 to 11 cm.

Circuit Fig. 2 is a non-contact octave rhubatron.

Further information may be obtained on application to the Chief Valve Engineer, Standard Telephones and Cables Ltd., Connaught House, Aldwych, London, W.C.2.

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