



# Velocity Modulated Oscillator

V246A/IK (CV.228)

The V246A/IK is a velocity modulated oscillator of the coaxial line type for pulsed or CW operation over the band 6 to 7 cm.

The low voltage operation is made possible by the use of a magnetic field to focus the electron stream through the resonator system of the valve.

## 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      | 90   | 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 peak cathode current must not exceed                                     | 0.5 | A |

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## OPERATING CONDITIONS.

### CW BEATING OSCILLATOR 6 to 7 cm.

|                          |  |
|--------------------------|--|
| Grid voltage $V_{g_1}$   | 0 to 200 V negative with respect to cathode.   |
| Resonator voltage $V_r$  | At 6.45 cm. 220 V $\pm 5\%$ . For other wavelengths the $V_r$ is approximately proportional to the square of the frequency |
| Screen voltage $V_{g_2}$ | 0 to $V_r$   |
| Anode voltage $V_a$      | $V_r$ plus 10 to 20 V  |
| Output power $W_o$       | Not less than 0.5 W with 15 W input at 6.45 cm.  |

The output may be controlled by either  $V_{g_1}$  or  $V_{g_2}$ . It is usually desirable to set  $V_{g_1}$  to say—15 V and adjust  $V_{g_2}$  by means of a potentiometer across the resonator supply.

**PULSE OPERATION** with less than 10% duty cycle. Suitable as a transmitter. Subject to a delay time of 1  $\mu$  sec. approximately.

|                          |   |
|--------------------------|---|
| Grid voltage $V_{g_1}$   | 0 to 200 V negative to the cathode  |
| Screen voltage $V_{g_2}$ | 0 to $V_r$  |
| Resonator voltage $V_r$  | At 6.45 cm. 800 V $\pm 5\%$ . For other wavelengths the $V_r$ is approximately proportional to the square of the frequency. |
| Anode voltage $V_a$      | $V_r$ plus 10 to 20 V   |
| Output power $W_o$       | Up to 20 W  |

The output may be controlled by either  $V_{g_1}$  or  $V_{g_2}$  as for CW operation.

### 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 very accurately aligned in the magnetic field so that as much of the current as possible reaches the anode. Once aligned no further adjustment is necessary when changing valves.



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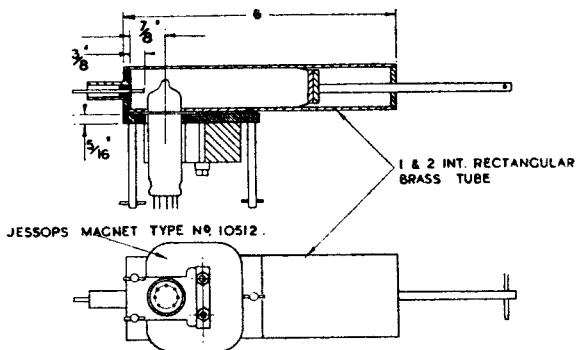
## CIRCUITS.

Two circuits suitable for use with this valve are shown below. The position of the output probe is of importance. In circuit A the valve excites a rectangular wave guide which is tunable over the range 6 to 7 cm. by a feathered plunger.

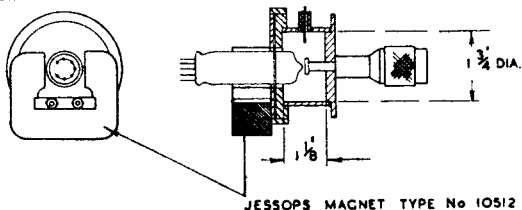
Circuit B is a cavity resonator with a micrometer screw for wavelength adjustment. Wavelength range of this circuit is 6.3 cm.  $\pm$  0.2 cm.

The mean wavelength is determined by the diameter of the cavity.

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



CIRCUIT A.



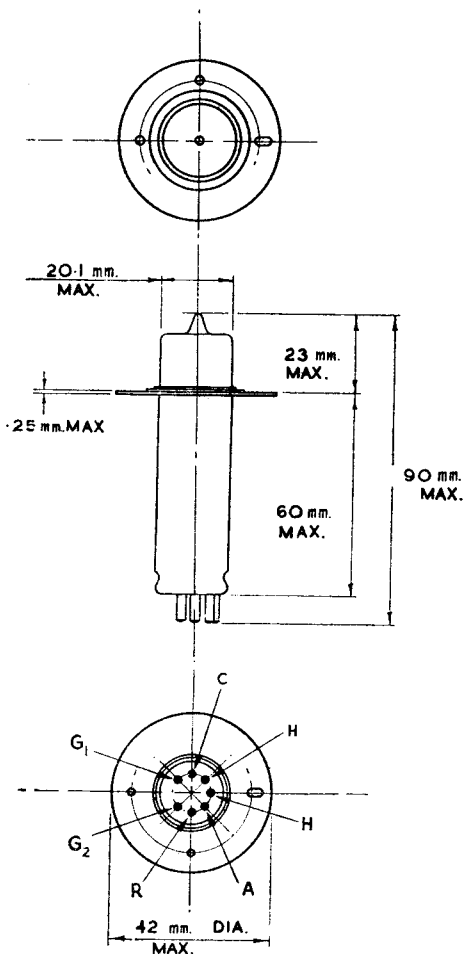
CIRCUIT B.

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