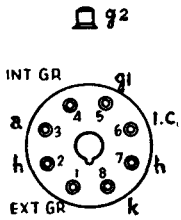
FERRANTI

TETRODE ELECTROMETER VALVE

BM10

A single tetrode electrometer valve, with an indirectly heated oxide-coated cathode, suitable for battery or mains operation. Internal and external guard rings are fitted and the envelope is silicone coated to render it moisture repellent.



Base Connections

Underside View of Base

PHYSICAL DETAILS.

Base	International Octal.
Top Cap	Type CT2.
Max. Overall Length	140 mm. (5½in.).
Max. Seated Height	125 mm. (5in.).
Max. Diameter	45 mm. (1¾in.).
Mounting Position	Any.
Envelope	Clear glass, silicone coated.

BASE CONNECTIONS.

Pin 1—Ext. Guard Ring. Pin 5—Screen (g_1).
Pin 2—Heater (h) Pin 6—Internal Connection.
Pin 3—Anode (a) Pin 7—Heater (h)
Pin 4—Int. Guard Ring Pin 8—Cathode (k)
Top Cap—Control Grid (g_2)

HEATER.

Heater Voltage	4·0 volts.
Heater Current	0·25 amp.

RATINGS.

Max. Anode Voltage	8·0 volts.
Max. Screen Voltage	6·0 volts.

CAPACITANCES.

C_{in}	2·9 pF.
C_{out}	6·9 pF.
C_{a-g2}	5·0 pF.
C_{a-g1} (screen)	1·9 pF.

TYPICAL OPERATION.

Anode Voltage (Va) ...	4·6	6·0	4·0	volts.
Screen Voltage (Vg_1) ...	6·0	4·0	3·0	volts.
Control Grid Voltage (Vg_2)	−3·0	−3·0	−2·0	volts.
Anode Current (Ia) ...	275	190	100	μA.
Screen Current (Ig_1) ...	430	240	160	μA.
Mutual Conductance (gm)	160	100	90	μA/V.
Amplification Factor (μ)	2·0	1·8	2·0	
Control Grid Current (Ig_2)	$<30\times10^{-14}$	$<20\times10^{-14}$	$<2\times10^{-14}$	amp.
Control Grid Insulation (rg_2)	$>10^{13}$	$>3\times10^{13}$	$>10^{14}$	ohms.

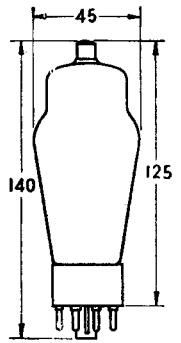
In order to achieve maximum stability and to reduce the control grid current to a minimum :—

1. Keep the glass envelope dry and free from contamination by fingerprints, etc.
2. Operate the valve in total darkness with adequate electrical and magnetic screening.
3. Ensure that the potential at any point of the heater is positive relative to that of the cathode.

e.g.—In DC. operation connect the heater negative terminal to the cathode or to a source of constant potential which is positive relative to the cathode.
In AC. operation maintain the centre-tap of the 4-volt heater supply 4 volts positive relative to the cathode.

4. The guard rings should be at a fixed potential equal to the mean operating potential of the control grid.

A steady operating condition of the valve will be more rapidly achieved if the heater voltage is applied at least 45 seconds before the anode and screen potentials.



All dimensions shown are in millimetres (max.).

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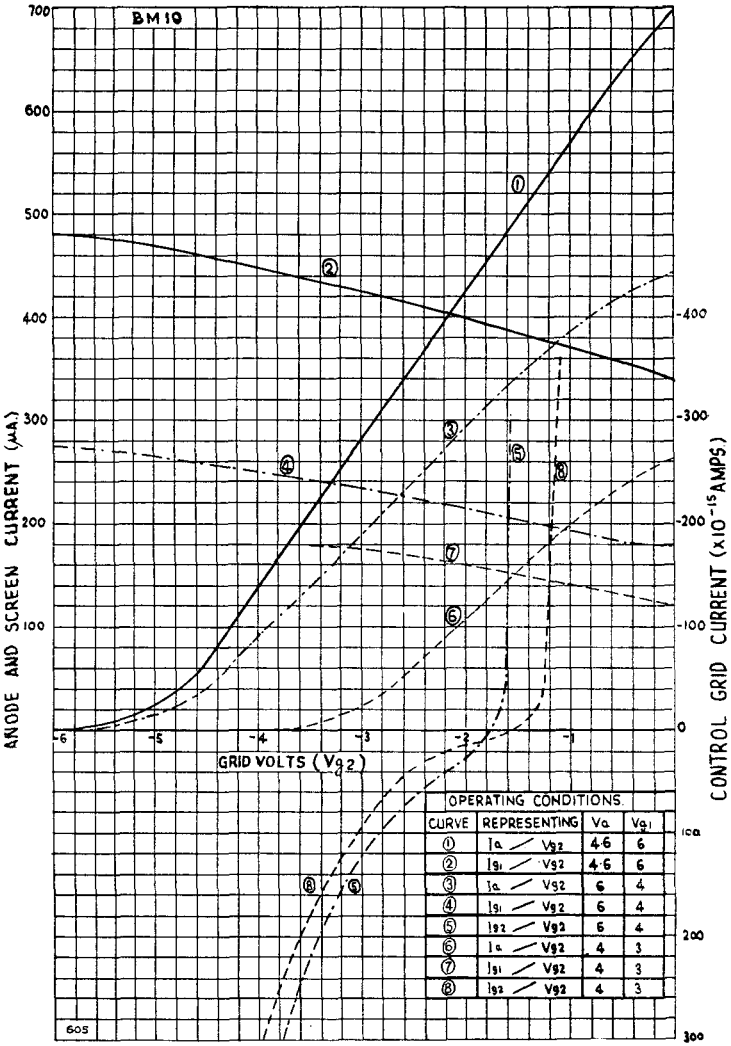

OPERATING CONDITIONS.

CURVE	REPRESENTING	Va	Vg1
①	Ia / Vg2	4·6	6
②	Ig1 / Vg2	4·6	6
③	Ia / Vg2	6	4
④	Ig1 / Vg2	6	4
⑤	Ig2 / Vg2	6	4
⑥	Ia / Vg2	4	3
⑦	Ig1 / Vg2	4	3
⑧	Ig2 / Vg2	4	3