FERRANTI

COLD CATHODE TETRODE

Ferranti "Argostron" Type ASP2 is an argon filled cold cathode tetrode valve. It is intended for use as a Stroboscopic Light Source in applications employing photographic recording. For visual observations Type NSP2 is recommended.

PHYSICAL SPECIFICATION.

Base	International Octal.
Max. Seated Height	89 mm. ($3\frac{1}{2}$in.).
Max. Overall Length	103 mm. ($4\frac{1}{16}$in.).
Max. Base Diameter	32 mm. ($1\frac{1}{4}$in.).
Length of Arc	24 mm. ($1\frac{15}{16}$in.).
Mounting Position	Any.

BASE CONNECTIONS.

Pin 1—No Connection.	Pin 5—Trigger Electrode 1.
Pin 2—No Connection.	Pin 6—No Pin.
Pin 3—Anode.	Pin 7—No Connection.
Pin 4—Trigger Electrode 2.	Pin 8—Cathode.

RATINGS (Absolute).

Max. Anode Voltage (working)	380 volts.
Min. Anode Voltage (working)	270 volts.
Max. Peak Inverse Anode Voltage	350 volts.
†Max. Average Anode Current ...	80 μF.
→ Max. Discharge Capacitance ...	16 mA.
Max. Average Trigger Current	10 mA.
Min. Series Discharge Resistance	0·3 ohms.

CHARACTERISTICS.

*Static Striking Voltage (tr_2 to tr_1)	75-120 volts.
Max. Flashing Frequency ...	250 per sec.
Min. Trigger Current required at V_a 380	100 μA.
Min. Trigger Current required at V_a 270	200 μA.
→ Peak Luminous Intensity / Flash Duration	The discharge of a 2 μF capacitor charged to 350V. gives a Peak Luminous Intensity of approx. 80 candelas with a flash duration of 20 microseconds at half the peak light output.
→ Delay Time	From 50 microseconds down to a few microseconds dependent on circuit conditions. Minimum delay times are achieved by using high values of trigger pulse energy and anode voltage.

TYPICAL OPERATION as Stroboscopic Light Source :

DC. Supply Voltage	350 volts.
‡Vtr_2 at Triggering Instant ...	70 volts.
§Trigger Pulse Amplitude (Vtr_1)	150 volts min.
Series Discharge Resistance ...	0·5 ohms.
Charging Resistor	3000 ohms.
Discharge Capacitor for Operation at :—	
6–35 c.p.s.	4 μF.
30–50 c.p.s.	3 μF.
45–80 c.p.s.	2 μF.
80–150 c.p.s.	1 μF.
140–250 c.p.s.	0·5 μF.

For typical circuits and further information refer to "Notes on Operation" on NSP2 Data Sheets.

→ †A minimum peak current of 5 amp. is recommended. This ensures the formation of an arc discharge with an anode-cathode volt drop of approx. 20 volts. If the peak current is less than 5 amps. a glow discharge is likely to form with a volt drop of 75 volts which may result in permanent damage to the valve.

*The limits quoted refer to the trigger voltage for a low rate of change of electrode voltages with tr_1 negative to tr_2. For pulse operation a higher trigger voltage is generally necessary. See under "Typical Operation."

‡Positive with respect to cathode.

§Negative with respect to cathode.

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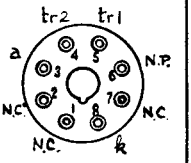
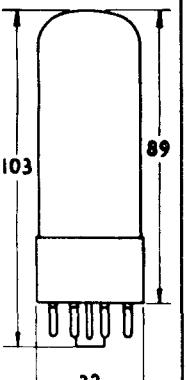
ASP2



Base Connections Underside View Base



All dimensions shown are in millimetres.

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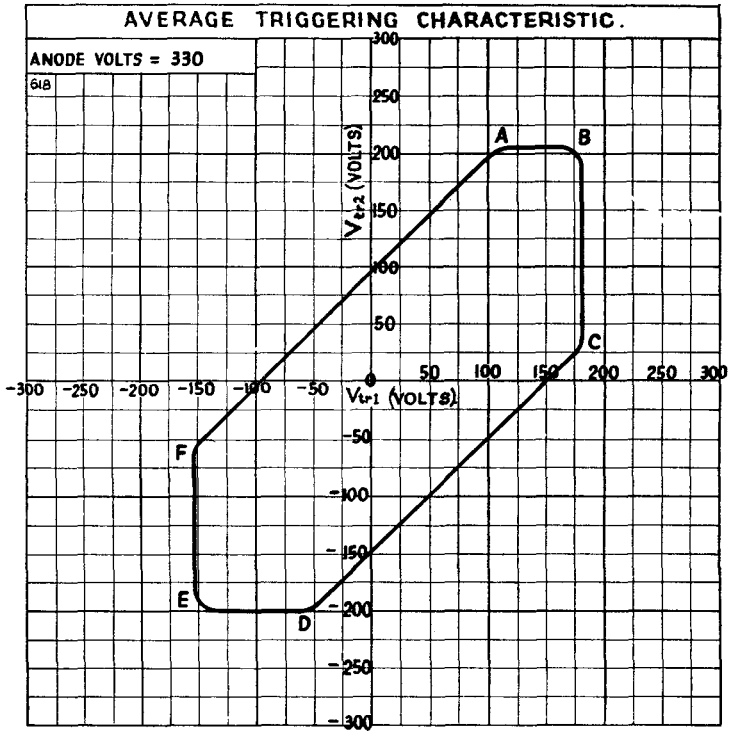

AVERAGE STATIC TRIGGERING CHARACTERISTIC

The area enclosed by the loops is an area of non-conduction. If the vector sum of the voltages on two electrodes lies within the loop the valve will not fire. Any change of either or both of these voltages which cause the vector sum to fall outside the loop will trigger the valve.

For pulse operation it is usually necessary to ensure that the pulse has a sufficient excess voltage (See "Typical Operation.")

As the triggering impulse carries the vector sum of the applied voltages outside the loop the point at which it crosses the loop indicates the manner in which the valve is triggered as follows :—

Between AB Trigger Electrode 2 to Cathode.
BC Trigger Electrode 1 to Cathode.
CD Trigger Electrode 1 to Trigger Electrode 2.
DE Cathode to Trigger Electrode 2.
EF Cathode to Trigger Electrode 1.
FA Trigger Electrode 2 to Trigger Electrode 1.

The most reliable operation is ensured by triggering between tr_2 and tr_1, i.e., between F and A.