FERRANTI

ARC DISCHARGE VALVE

AD30

A Cold Cathode gas filled arc discharge Diode which is capable of passing high peak currents of short duration ; suitable for use with magneto-striction oscillators, etc.

PHYSICAL DETAILS.

Max. Overall Length	249 mm. (9¾in.).
Max. Overall diameter	31 mm. (1¼in.).
Max. Dia. of glass tube ...	28·5 mm. (1⅛in.).
End Caps	CT3.
Mounting Position	Any.

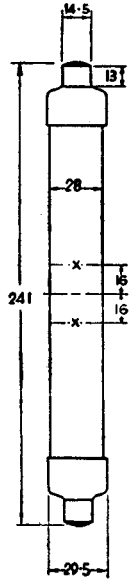
RATINGS (Max. Ratings are "Absolute.")

Max. Anode Voltage	1800 volts.
Max. Mean Anode Current ...	100 mA.
Max. Operating Frequency ...	4 pps.
Max. Discharge Capacitor ...	10 μF.

TYPICAL OPERATION and CHARACTERISTICS.

Anode Voltage	1650 volts.
Discharge Capacitor	4 μF.
*Trigger Voltage	20000 volts.
Load Resistance	4 Ω
Operating Frequency	4 pps.
†Peak Anode Current ... (approx.)	250 Amps.
‡Anode Current Duration (approx.)	25 μsecs.
Delay Time	50 μsecs.

Typical circuits for operation are shown overleaf. These circuits employ a Ferranti Cold Cathode Tetrode Type NSP2 to discharge high peak current pulses through the primary of a Pulse Transformer or Ignition Coil to provide the high voltage trigger pulses for the AD30.



All dimensions shown are in millimetres. (max.).

*The trigger voltage may be supplied from an ignition coil giving a secondary voltage between 20 and 30 kilovolts. This voltage should be applied to the valve by means of a clip, or a few turns of bare wire wrapped round the envelope. The trigger clip should be located near the mid point of the tube in the area enclosed by lines X X on the outline drawing. The trigger pulses can be applied to the primary of the ignition coil by electronic or mechanical means.

†The peak anode current with zero discharge resistance is of the order of 550 Amps. when a 4 μF. capacitor is employed. Higher values of capacitor result in higher peak currents.

‡The duration of the current pulses varies with voltage, discharge capacitor and discharge circuit resistance. With Va=1650, C=4 μF. typical times are as follows :—

Circuit Resistance.	Current Duration.
0 ohms	10 μsecs.
4 ohms	25 μsecs.
10 ohms	70 μsecs.

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OPERATION CONTROLLED BY FREE RUNNING OSCILLATOR.

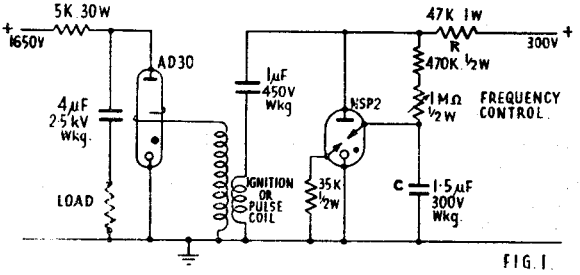

FIG. 1.

The frequency of operation is controlled by the values of R and C. The values shown in the diagram are suitable for a repetition rate of 4 pps.

ELECTRONICALLY SYNCHRONISED OPERATION.

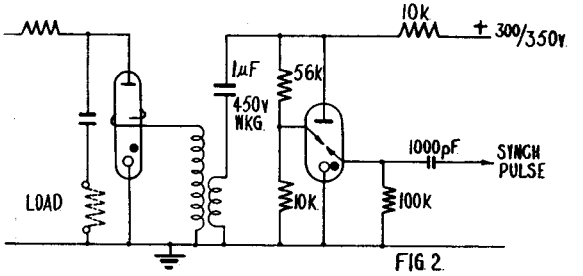

FIG. 2.

Greater frequency stability can be attained if the NSP2 is triggered from a controlled frequency source as indicated in the above diagram. The synchronising pulses must be negative going and of about 150 volts minimum height.

MECHANICALLY SYNCHRONISED OPERATION.

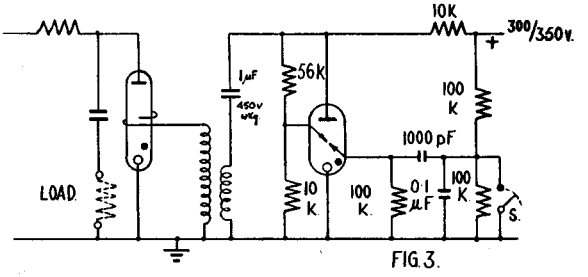

FIG. 3.

Closing the switch S causes a single discharge. The switch may be operated by a motor or other mechanical means.

Further information regarding operation of the NSP2 as a trigger valve may be obtained from the Data Sheet for NSP2.