



Hot-Cathode Gas-Filled Thyratron

Code: 5545 (CV2215) ←

The 5545 is a triode type inert-gas filled thyratron for use in motor speed and welder control circuits. It is directly equivalent to the U.S.A. GL5545.

CATHODE

Oxide-coated filament		
Filament voltage	2.5	V
Nominal current	21	A
Filament heating time	60	sec

DIRECT INTERELECTRODE CAPACITANCES

Anode to control grid	0.8	pF
Control grid to cathode	45	pF

CHARACTERISTICS

Deionization time, approximate		
At $V_{g1} = 250V$	50	μ sec
At $V_{g1} = 12V$	500	μ sec
Ionization time, approximate	10	μ sec
Voltage drop, typical	16	V

MECHANICAL DATA

Maximum overall length	228.6	mm
Maximum seated height	211.1	mm
Maximum diameter	66.7	mm
Base	B4D	
Top cap	CT3 with insulating collar	
Net weight	340	g
Mounting position	Unrestricted	←

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MAXIMUM RATINGS

Maximum peak anode voltage		
Forward	1 500	V
Inverse*	1 500	V
Maximum cathode current		
Peak	80	A
Average	6.4	A
Fault (maximum duration 0.1 sec)	1 120	A
Maximum averaging time	15	sec
Maximum negative control grid voltage		
Before conduction	250	V
During conduction	10	V
Maximum positive control grid current		
Anode positive	0.20	A
Anode negative	0.10	A
Maximum recommended grid circuit resistance	0.1	MΩ
Maximum frequency	150	c/s
Ambient temperature range	-55 to +70	°C

*The product of the rate of current decay in amperes per micro-second just prior to commutation and the rate of inverse voltage rise in volts per micro-second just after commutation must not exceed 130.



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TYPICAL OPERATING CONDITIONS

Circuit	No. of valves	Maximum A.C. Input Voltage (V _{r.m.s.})	Maximum D.C. Output Voltage (V)	Maximum D.C. Output Current (A)
Single Phase Full Wave Circuit No. 1	2	525	475	12.8
Single Phase Full Wave Bridge Circuit No. 2	4	1 100	950	12.8
Three Phase Half Wave Circuit No. 3	3	610	715	19.2
Three Phase Double Y Parallel Circuit No. 4	6	610	715	13.4
Three Phase Full Wave Circuit No. 5	6	610	1 430	19.2

The above tables suitable circuits for this thyratron, and shows their safe maximum input and output conditions. The values are based on sine wave input and the use of a suitable choke input filter.

This thyratron being directly heated, it is recommended that the output circuit be connected to the midpoint of the filament transformer secondary winding.

For details of circuits referred to see sheet K—8 in the introduction to this handbook.

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THYRATRON OPERATION

The minimum values of grid blocking voltage to prevent ignition are :

Grid Voltage (approx.) (V)	Anode Voltage (peak) (V)
— 11	1 500
— 9	1 000
— 5.5	500
0	100

For positive operation it is recommended that for a given anode voltage the grid should be biased back beyond the value required to prevent ignition and a pulse of 20 to 30 volts peak applied.

The pulse used should have a leading edge as near vertical as possible and the pulse circuit should be of high impedance to limit the grid current to the safe maximum value.

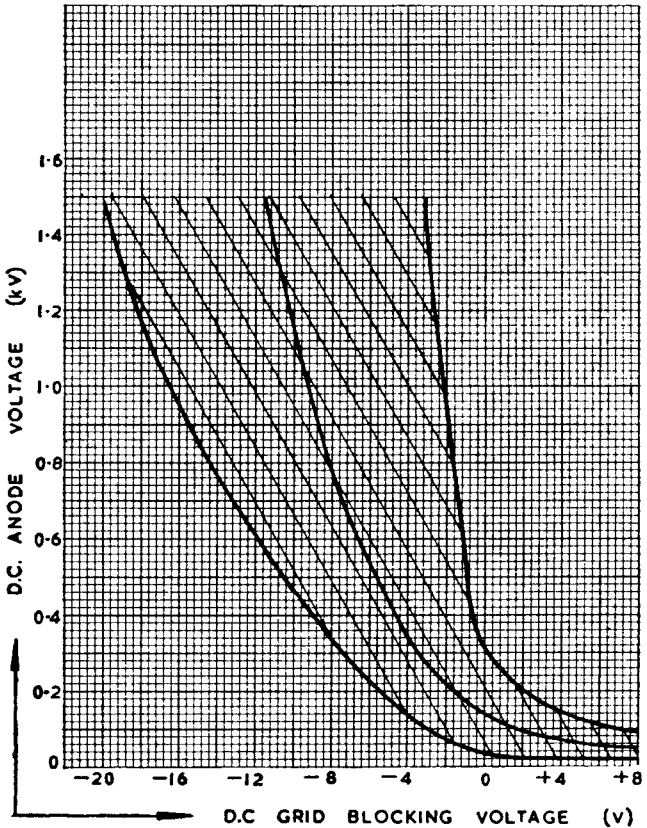
Control of the output may be effected by varying the phase of the grid pulse relative to the phase of the applied anode voltage.



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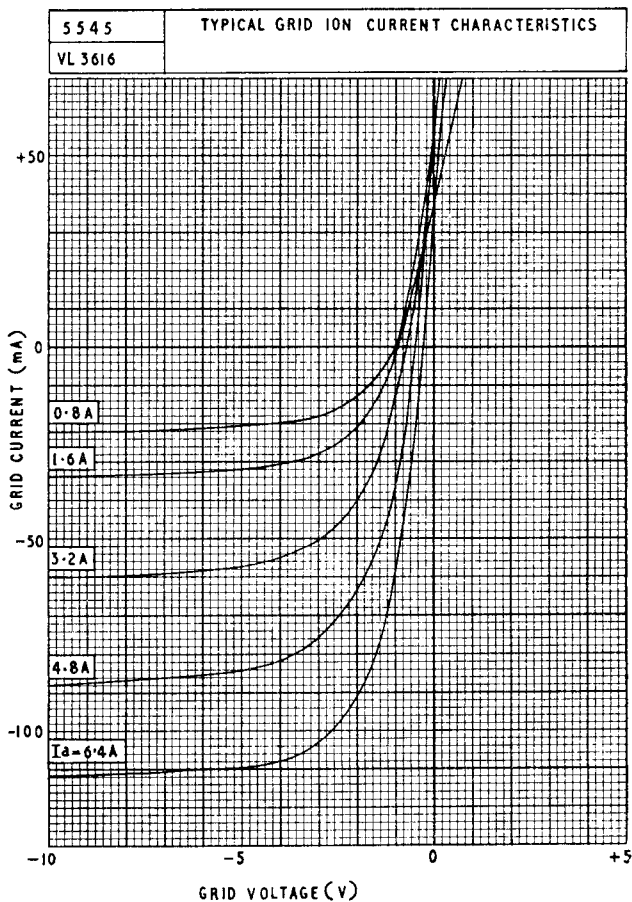
5545 (3G/501A)	TYPICAL CONTROL CHARACTERISTIC. SHADED AREA INDICATES THE SPREAD.	
VL 1977		



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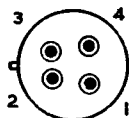
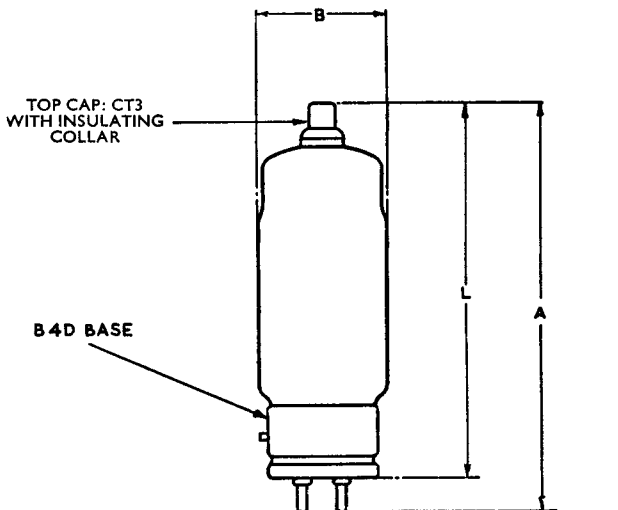
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**BASING**

- 1 CONTROL GRID
 - 2 FILAMENT
 - 3 FILAMENT
 - 4 NO CONNEXION
- T.C ANODE

DIM	MILLIMETRES	INCHES
A	203.2 ± 25.4	8 ± 1
B	66.7 MAX	$2 \frac{5}{8}$ MAX.
L	185.7 ± 25.4	$7 \frac{5}{16} \pm 1$

NOTE:- BASIC FIGURES ARE INCHES