



Half-Wave Mercury- Vapour Rectifier

Code: 2V/531E (CV1420)

This rectifier is equivalent to, and replaces, the 4078A type, which is now obsolete.

CATHODE.

Oxide-coated, shielded filament

Filament voltage	5	V
Nominal current	20	A
Minimum heating time (ambient temperature > 20°C)	1	min←

MECHANICAL DATA.

Maximum overall length	412.8	mm
Maximum bulb diameter	95.3	mm
Base	Special 2-pin (see drawing)	
Top cap	Special (see drawing)	
Socket type	4022A	
Net weight	900	g
Shipping weight approx.	9	kg
Shipping dimensions	14 × 14 × 29	in

MAXIMUM RATINGS.

FILAMENT EXCITATION

	In phase	In quadrature	
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Maximum peak inverse voltage	20	20	kV
Maximum peak anode current	10	20	A
Maximum average anode current	2.5	5	A
Maximum fault anode current	50	50	A
Maximum duration of fault anode current	0.1	0.1	sec
Maximum voltage drop	12	12	V
Maximum condensed mercury temperature range	15 to 65	15 to 65	°C

The above ratings apply to operation with a choke input filter and a supply frequency of 50 c/s.

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CATHODE HEATING TIME.

Ambient Temperature	10 to 20°C	20°C and above
Minimum pre-heating period	2 minutes	1 minute

MAXIMUM PEAK INVERSE VOLTAGE RATINGS AND CONDENSED MERCURY-VAPOUR TEMPERATURES.

Natural Ventilation	15 to 50°C	15 to 40°C	—	—
Forced Ventilation	15 to 65°C	15 to 55°C	15 to 45°C	15 to 40°C
Peak Inverse Voltage	Less than 7000 V	7500 to 10000 V	10000 to 12500 V	Greater than 12500 V

After shipment or transit the valve must be pre-heated for not less than 30 minutes before any anode voltage is applied, so that the mercury may be distributed correctly.

The temperature limits given under "Natural Ventilation" are only valid for unrestricted natural ventilation. Forced air cooling is recommended and is required for operation up to the limit of condensed mercury temperature.

Before putting a valve of this type into service it is recommended that reference be made to the General Information section K in the front of the valve handbook.



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TYPICAL OPERATING CONDITIONS.

Circuit	No. of Valves	Maximum A.C. Input Volts (r.m.s.)	Maximum D.C. Output Volts (Volts)	Maximum D.C. Output Current (Amperes)
Single-Phase Full Wave Circuit No. 1	2	7000	6300	5*
		7000	6300	10†
Single-Phase Full Wave Bridge Circuit No. 2	4	14000	12600	5*
		14000	12600	10†
Three-Phase Half Wave Circuit No. 3	3	8150	9550	7.5*
		8150	9550	15†
Three-Phase Double Y Parallel Circuit No. 4	6	8150	9550	15*
		8150	9550	30†
Three-Phase Full Wave Circuit No. 5	6	8150	19100	7.5*
		8150	19100	15†

* Filament excitation in phase with anode.

† Filament excitation in quadrature with anode.

The above indicates suitable circuits for this rectifier, and shows the safe maximum input and output conditions. The valves are based on sine wave input and the use of a suitable choke input filter.

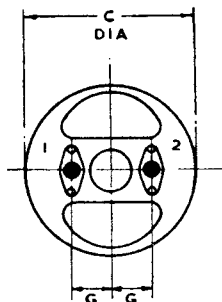
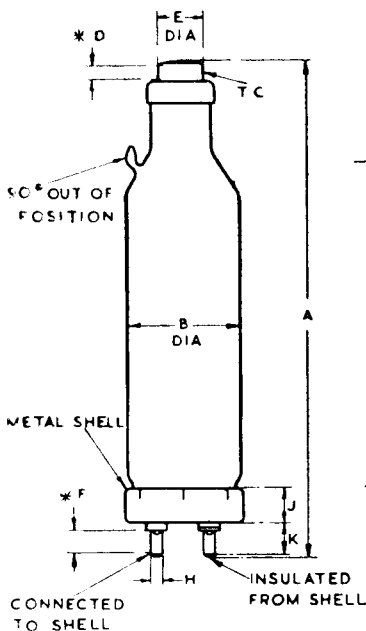
This rectifier being directly heated, it is recommended that the output circuit be taken from the mid-point of the filament supply transformer.

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

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**BASING**

- 1 FILAMENT
2 FILAMENT
T.C ANODE

NOTE:

ONE FILAMENT PIN
CONNECTED TO METAL
SHELL.

DIM	MILLIMETRES	INCHES	DIM	MILLIMETRES	INCHES
A	412.8 MAX	16 ¹ / ₄ MAX	F	23.80 ± 0.51	0.937 ± 0.020
B	95.3 MAX	3 ³ / ₄ MAX	G	22.00 ± 0.25	0.866 ± 0.010
C	96.04 ± 0.4	3 ²⁵ / ₃₂ ± ¹ / ₆₄	H	9.53 ± 0.05	0.375 ± 0.002
D	10.0 MIN	0.393 MIN	J	25.4 ± 0.4	1 ± ¹ / ₆₄
E	36.00 ± 0.25	1.418 ± 0.010	K	28.57 ± 0.51	1.125 ± 0.020

NOTE:- BASIC FIGURES ARE INCHES

* DENOTES:- CONTACT LENGTH.