

HYDROGEN DIODE

DESCRIPTION—The 7791 is an indirectly heated, hydrogen filled, half-wave diode designed for use in high-voltage rectifier circuits. The 7791 is a rugged diode that can handle higher voltage than comparable xenon-filled tubes, and is more efficient than vacuum rectifiers. An internally-connected hydrogen generator prevents gas clean-up.

Contrasted with a solid state rectifier, the 7791 can withstand high current and inverse voltage surges. This diode also has the advantage of being temperature free and has a wide range of mounting positions as compared with mercury-vapor tubes. The 7791 is capable of delivering 2.0 amperes average and withstanding 25 kilovolts peak inverse voltage as shown on rating graph.

The 7791 employs flange mounting for minimum overall height consistent with good electrical connections and ease of installation.

ELECTRICAL DATA

	Min	Bogey	Max	
Heater Voltage	4.75	5.0	5.25	Volts
Heater Current— $E_f = 5.0$ Volts.....	13	15	17	Amperes
Cathode Heating Time.....	3	—	—	Minutes
Anode Voltage Drop.....	30	—	60	Volts
Initial Firing Voltage.....	—	—	100	Volts
Recurrent Firing Voltage.....	30	—	75	Volts

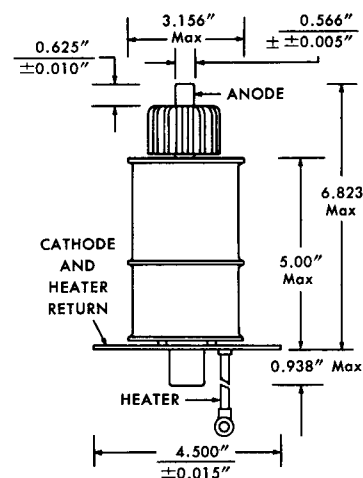
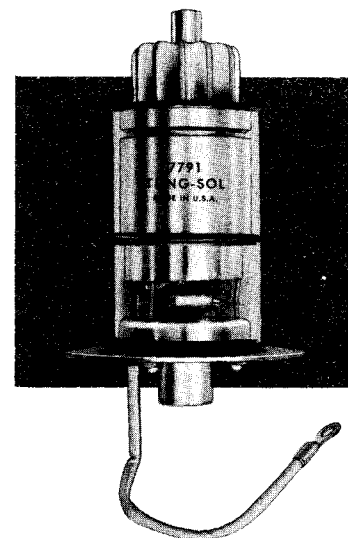
MECHANICAL DATA

Type of Cooling.....	See Rating Graph. Convection or Forced Air — 50 cfm directed at top of radiator
Mounting Position	Horizontal or Vertical (Base Down)
Average Net Weight.....	1 Pound 13 Ounces
Dimensions	See Outline Drawing
Mounting Data	See Mounting Data Drawing
Anode Connection	See Outline Drawing
Heater Connection	$7 \pm \frac{1}{2}$ -inch long lead with lug for $\frac{1}{4}$ -inch diameter screw

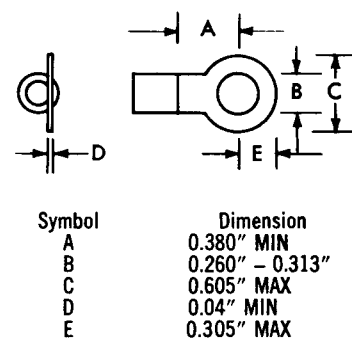
RATINGS, ABSOLUTE VALUES

	SHUNT DIODE SERVICE		RECTIFIER SERVICE		
	Minimum	Maximum	Minimum	Maximum	
Peak Inverse Anode Voltage.....	—	30,000	—	25,000	Volts
Cathode Current					
Peak	—	750	—	8	Amperes
Average	—	0.5	—	2	Amperes
RMS	—	20	—	—	Amperes
Fault — 0.1 Second					
Maximum Duration	—	1,000	—	60	Amperes
Averaging Time	—	—	—	15	Seconds
Ambient Temperature	—55	+75	—55	+75	Degrees Centigrade
Altitude	—	10,000	—	10,000	Feet

CAUTION—In order to avoid damage to tube, the cathode connection must be made to the base flange only.



(SEE CAUTION NOTE)



OUTLINE DRAWING

TYPE 7791

MAXIMUM RATING CHART FOR INFINITE INDUCTANCE CHOKE INPUT FILTER

FIG.	CIRCUIT	TRANSFORMER	NO. OF TUBES	*	A-C SECONDARY VOLTAGE E_{rms} Kilovolts	D-C OUTPUT — APPROX		RIPPLE	
						E_{dc} Kilovolts	I_{dc} AMPS	KILOVOLTS RMS	FREQ
1	Half-wave 1-phase	1-phase	1	A	7.10	3.20	1.75	3.50	f
				B	14.20	4.80	1.00	5.25	
				C	14.20	4.80	2.00	5.25	
				D	17.50	8.00	1.00	8.75	
2	Full-wave 1-phase	1-phase C-T	2	A	3.55	3.20	3.50	1.50	2f
				B	7.10	4.80	2.00	2.25	
				C	7.10	4.80	4.00	2.25	
				D	8.80	8.00	2.00	3.75	
3	Bridge circuit 1-phase	1-phase	4	A	7.10	6.40	3.50	3.00	2f
				B	14.20	9.60	2.00	4.50	
				C	14.20	9.60	4.00	4.50	
				D	17.50	16.00	2.00	7.50	
4	Half-wave 3-phase	Delta-Wye	3	A	4.10	4.80	5.25	0.85	3f
				B	8.20	7.20	3.00	1.30	
				C	8.20	7.20	6.00	1.30	
				D	10.00	12.00	3.00	2.30	
5	Full-wave 3-phase	Delta-Wye	6	A	4.10	9.50	5.25	0.40	6f
				B	8.20	14.25	3.00	0.60	
				C	8.20	14.25	6.00	0.60	
				D	10.00	23.75	3.00	1.15	
6	Full-wave 3-phase	Delta-Delta	6	A	7.10	9.50	5.25	0.40	6f
				B	14.20	14.25	3.00	0.60	
				C	14.20	14.25	6.00	0.60	
				D	17.50	23.75	3.00	1.15	

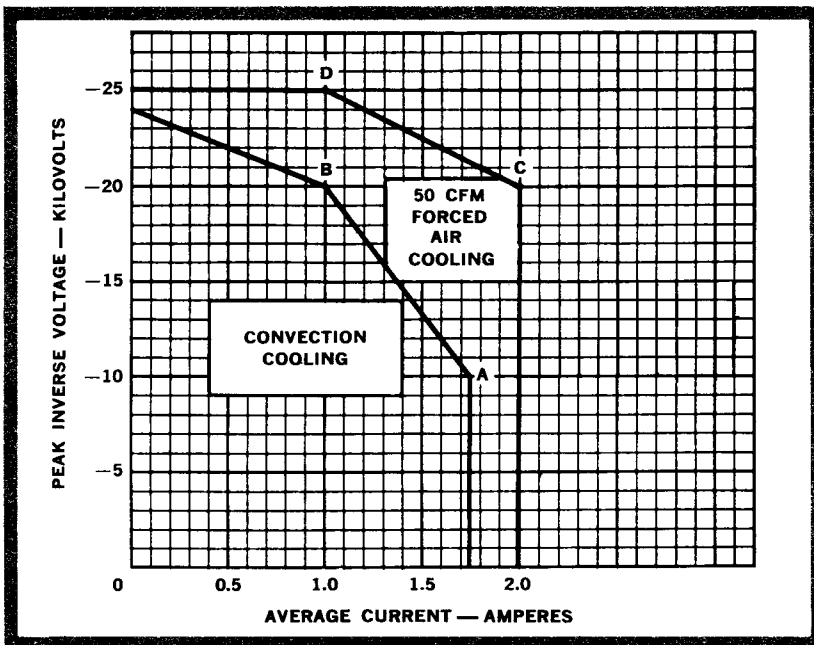
*See RATING GRAPH

A: Convection cooled at maximum current rating.
B: Convection cooled at maximum voltage rating.
C: Forced air cooled at maximum current rating.
D: Forced air cooled at maximum voltage rating.

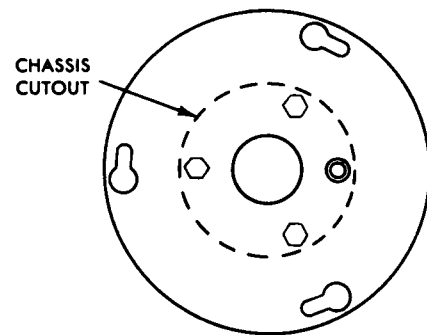
For figure references see STANDARD RECTIFIER CIRCUITS AND RATINGS sheet.

The 7791 should be protected from transient voltages in excess of the maximum rating by spark gaps installed either directly across the tube or across each plate transformer secondary leg.

RATING GRAPH



MOUNTING DATA



NOTES

- 2.625 inch minimum diameter mounting hole required.
- Three mounting slots for 0.50 inch maximum head $\frac{1}{4}$ -inch screws spaced 120 degrees on 3.750 ± 0.010 inch diameter circle.



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