

TUNG-SOL

PRODUCT BULLETIN

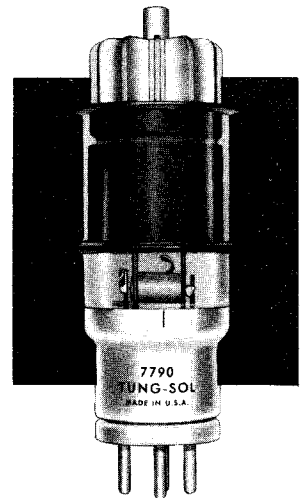
**INDUSTRIAL
ELECTRON
TUBE
TYPE 7790**
DECEMBER, 1962

HYDROGEN DIODE

DESCRIPTION — The 7790 is an indirectly heated, hydrogen filled, half-wave diode designed for use in high-voltage rectifier circuits. The 7790 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 7790 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 7790 is capable of delivering 1.0 ampere average at 20 kilovolts peak inverse voltage.

In many cases the 7790 will function as a low impedance, direct replacement for the 576A vacuum rectifier tube.



ELECTRICAL DATA

	Min	Bogey	Max	
Heater Voltage	4.75	5.00	5.25	Volts
Heater Current — $E_r = 5.0$ Volts	9.5	11.0	12.5	Amperes
Cathode Heating Time	3	—	—	Minutes
Anode Voltage Drop	30	—	50	Volts
Initial Firing Voltage	—	—	70	Volts
Recurrent Firing Voltage	30	—	50	Volts

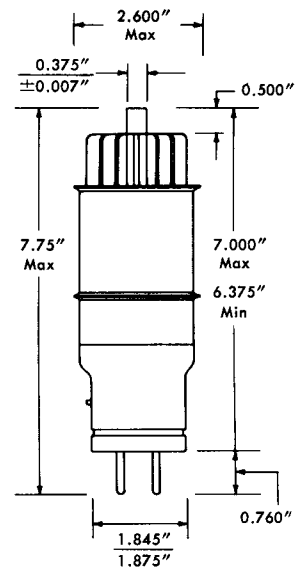
MECHANICAL DATA

Type of Cooling	See Rating Graph. Convection or Forced Air — 30 cfm directed at top of radiator
Mounting Position	Horizontal or Vertical (Base Down)
Average Net Weight	1 Pound 2 Ounces
Dimensions	See Outline Drawing
Base	JEDEC A4-107
Anode Connection	See Outline Drawing

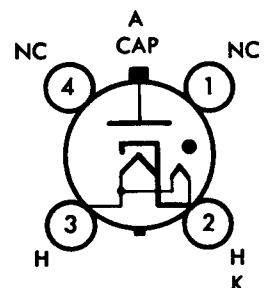
RATINGS, ABSOLUTE VALUES

	SHUNT DIODE SERVICE		RECTIFIER SERVICE		
	Minimum	Maximum	Minimum	Maximum	
Peak Inverse Anode Voltage	—	25,000	—	20,000	Volts
Cathode Current					
Peak	—	200	—	4	Amperes
Average	—	0.3	—	1	Ampere
RMS	—	7.7	—	—	Amperes
Fault — 0.1 Second					
Maximum Duration	—	400	—	30	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 pin 2 only.



OUTLINE DRAWING



(SEE CAUTION NOTE)

**BASIC DIAGRAM
BOTTOM VIEW**

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	11.0	5.0	1.0	5.50	f
				B	14.0	6.4	1.0	7.00	
2	Full-wave 1-phase	1-phase C-T	2	A	5.5	5.5	2.0	2.30	2f
				B	7.0	6.4	2.0	3.00	
3	Bridge circuit 1-phase	1-phase	4	A	11.3	10.0	2.0	4.70	2f
				B	14.0	12.8	2.0	6.00	
4	Half-wave 3-phase	Delta-Wye	3	A	6.5	7.5	3.0	1.50	3f
				B	8.0	9.5	3.0	1.70	
5	Full-wave 3-phase	Delta-Wye	6	A	6.5	15.0	3.0	0.60	6f
				B	8.0	19.0	3.0	0.80	
6	Full-wave 3-phase	Delta-Delta	6	A	11.0	15.0	3.0	0.60	6f
				B	14.0	19.0	3.0	0.76	

* See RATING GRAPH

A: Convection cooling at maximum current rating.

B: Forced air cooling at maximum voltage and current rating.

For figure references see STANDARD RECTIFIER CIRCUITS AND RATINGS sheet.

The 7790 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

