

AMPEREX TUBE TYPE 8270

same as ZT 1000

TENTATIVE DATA

The Amperex 8270 is a grid controlled mercury vapor half wave rectifier. It has a maximum PIV of 21 kv at an average anode current of 2.5 amps. At a PIV below 15 kv the anode current may rise to 3 amps. Six of these tubes in a three phase full wave circuit provide 12 kv at 9 amps.

MECHANICAL

Mounting Position	vertical, base down
Base	Super Jumbo, 4 pins, with bayonet
Accessories	
Socket	S-31747
Anode Connector	S-31748
Anode Cap (Supplied with the Tube)	S-31749 ¹
Dimensions	See outline drawing
Weight	
Net Weight	1 lb. 1 oz.
Shipping Weight	5 lbs. 1 oz.

ELECTRICAL

Filament	Oxide-Coated
Heating	Direct
Filament Voltage ²	5 volts
Filament Current	13.0 amps
Filament Warm-Up Time, Minimum ³	90 sec
Capacitances	
Anode to Grid	4 pf
Grid to Cathode	13 pf
Typical Characteristics	
Ionization Time	10 μ sec max
Deionization Time	500 μ sec max
Tube Voltage Drop ($I_b = 3$ amps)	12 volts

¹ This cap must always be mounted on the tube, also during preheating.

² A phase shift of $90^\circ \pm 30^\circ$ between E_b and E_f and/or use of a center-tapped filament transformer is recommended.

³ For average conditions, i.e. temperature within limits and proper distribution of mercury, See Table I.

After transport, a storage period, and also after a long interruption of operation a longer warm-up time is required before anode voltage may be applied. In general a time of 60 minutes will be sufficient to ensure proper distribution of the mercury.

MAXIMUM RATINGS, ABSOLUTE VALUES

Frequency	150	150	150 cps
Peak Anode Voltage			
Inverse	21	15	2.5 kv
Forward	21	15	2.5 kv
Anode Current			
Average	2.5	3	5 amps ⁴
Peak	10	12	20 amps
Surge	100	120	200 amps ⁵
Grid Bias	300	300	300 volts ⁶
Grid Resistance	100	100	100 k ohms max ⁷
Grid Resistance	10	10	10 k ohms min ⁷

TABLE I

Peak Inverse Voltage	21	15	10	2.5	kv
Temperature of Condensed Mercury ⁸	25-45	25-55	25-60	27-75	°C
Ambient Temperature ^{9, 10}	15-30	15-35	15-40	15-55	°C

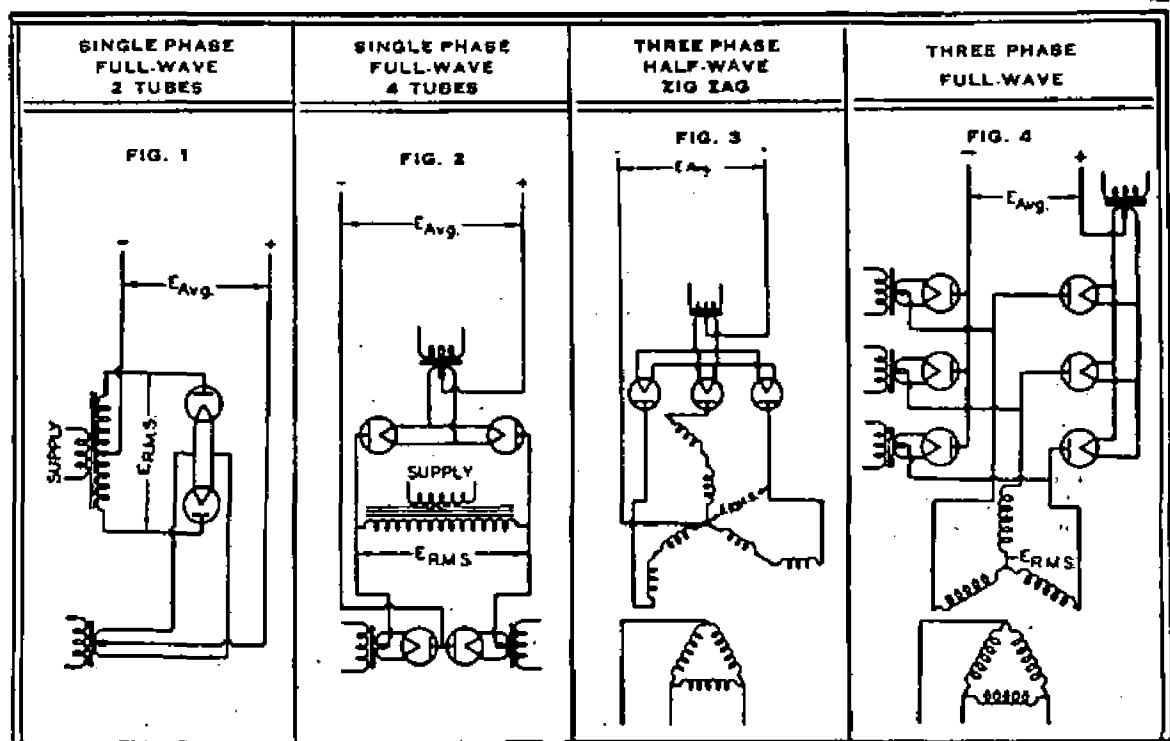
TYPICAL OPERATION ¹¹

Grid Voltage (E_b peak inverse 21 kv)	E_{c1}	- 100 volts
(E_b peak inverse 10 kv)	E_{c1}	- 50 volts
Grid Current	I_{c1}	2 ma

⁴ Averaging time $T_{av} = \text{max. } 30 \text{ sec.}$ ⁵ Max duration 0.1 sec.⁶ Direct voltage, before conduction.⁷ Recommended value: 33 k ohms⁸ If the equipment is started not more than twice daily, it is permissible to apply high voltage at a condensed-mercury temperature which is 5°C lower than the values mentioned in the table.⁹ With natural cooling, approximate values.¹⁰ The ambient temperature is defined as the temperature of the surrounding air and should be measured under the following conditions:

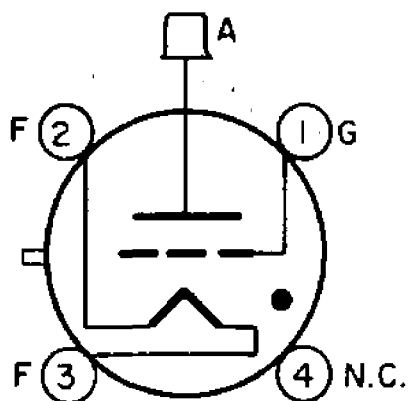
- Normal atmospheric pressure
- The tube should be adjusted to the worst possible operating conditions.
- The temperature should be measured when thermal equilibrium is reached.
- The distance from the thermometer to the outside of the envelope should be 3 inches (measured in a plane perpendicular to the main axis of the tube at the height of the condensed-mercury boundary).
- The thermometer should be shielded against direct heat radiation.

¹¹ Transformer losses and voltage drops in tubes are neglected.



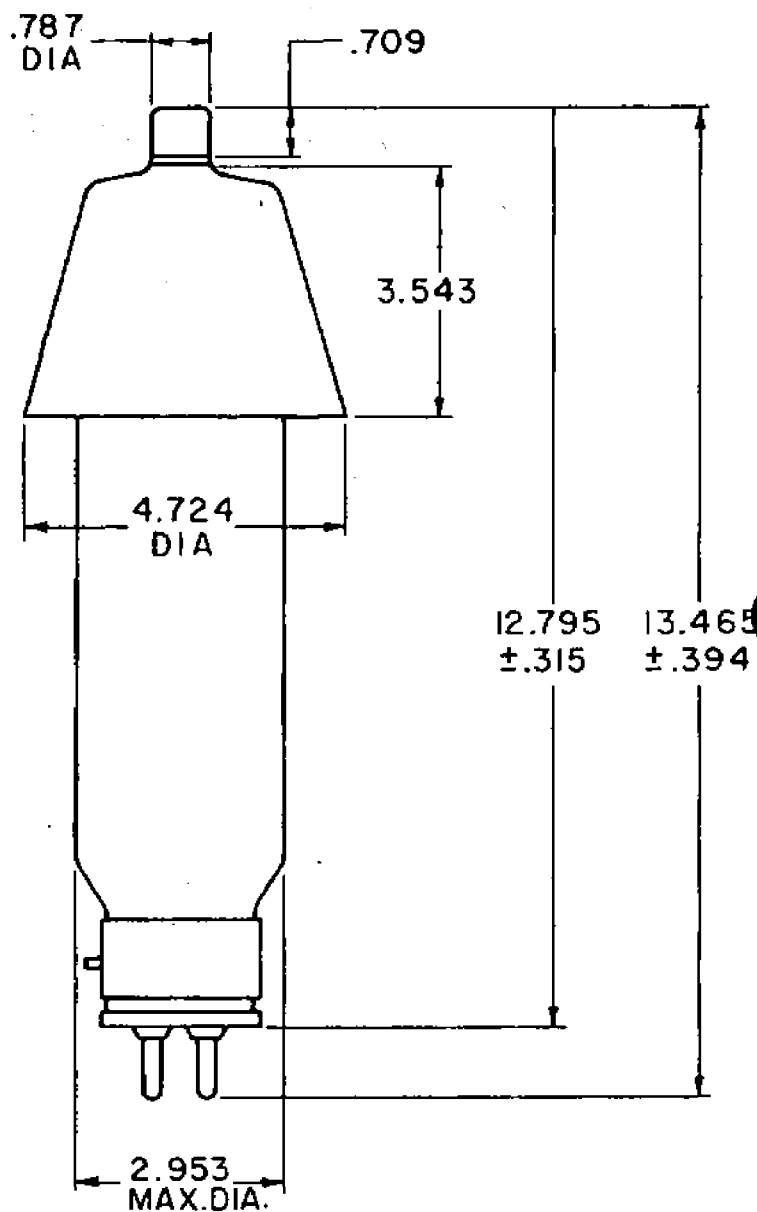
Peak Inverse Voltage = 21 KV				
	FIG. 1	FIG. 2	FIG. 3	FIG. 4
Transformer secondary Voltage kv. r.m.s.	7.4	14.8	8.5	14.8
Output Voltage kv	6.7	13.4	10	20
Output Current Amps	5	5	7.5	7.5
Output Power kw	33.5	67	75	150
Peak Inverse Voltage = 15 KV				
Transformer Secondary Voltage kv r.m.s.	5.3	10.6	6.1	10.6
Output Voltage kv	4.8	9.6	7.2	14.4
Output Current Amps	6	6	9	9
Output Power kw	28.8	57.6	64.8	130

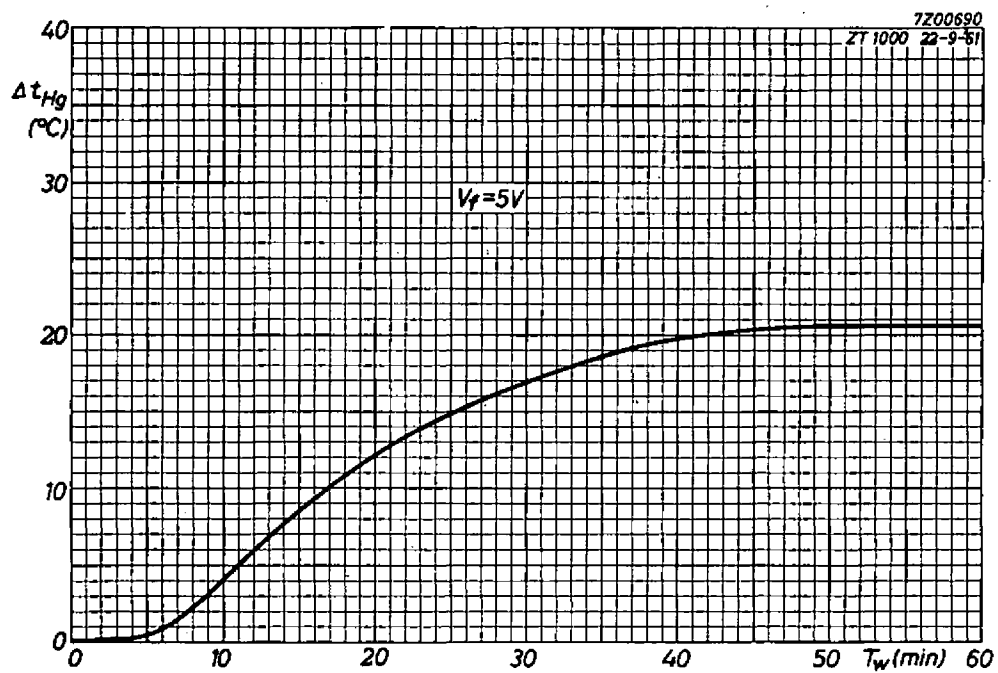
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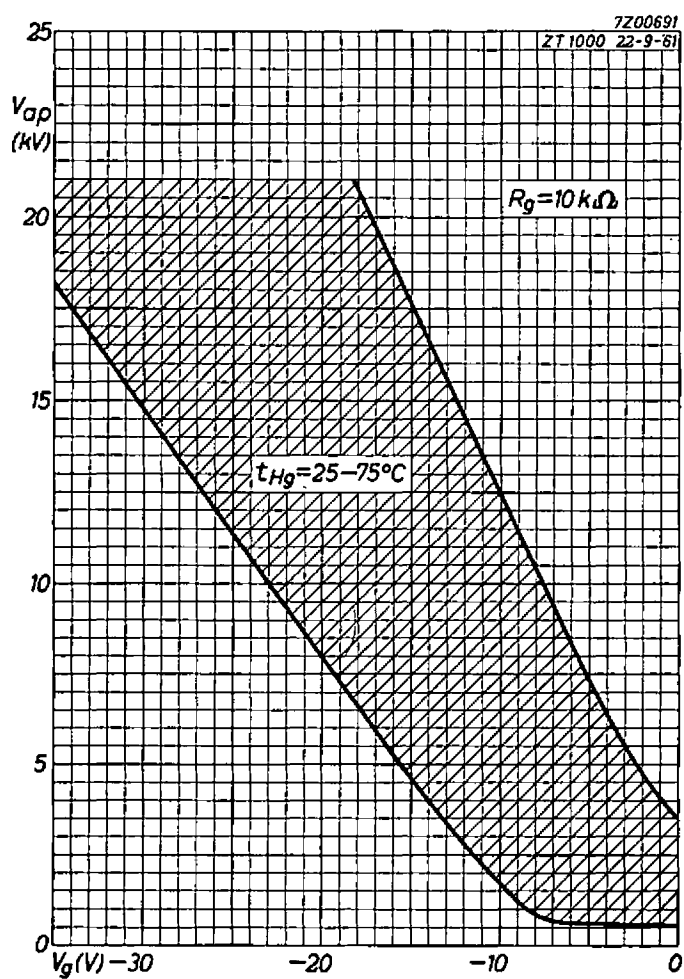
PIN CONNECTIONS

- 1. GRID
 - 2. FILAMENT
 - 3. FILAMENT
 - 4. NO CONNECTION
- CAP - ANODE





Rate of rise of condensed-mercury temperature



Control characteristics