

AMPEREX TUBE TYPE 7136

The 7136 is a single anode, high voltage, mercury vapor rectifier having plate current ratings intermediate between the standard types 575A and 6693. It has a cathode and anode design similar to the 6693 and is based for the 575A socket. It is recommended for use as a replacement for the 575A in existing equipment when greater reliability is desired. For new equipment design, the use of the Amperex 6693 is preferred.

GENERAL CHARACTERISTICS

ELECTRICAL

Cathode	Directly heated, oxide coated
Filament Voltage	5 volts ¹
Filament Current	11.5 amps
Heating Time (minimum)	60 sec. ²
Tube Voltage Drop	12 volts ³
Equilibrium condensed mercury temperature rise over ambient (see curve)	
No Load	19°C
Full Load	21°C

MECHANICAL

Mounting Position	Vertical, base down
Max. Overall Length	11 9/16 inches
Max. Diameter	2 27/32 inches
Plate Cap	Medium
Base	Jumbo, 4 pin with bayonet
Socket	Johnson 123-211-100 or equal

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MAXIMUM RATINGS

Peak Inverse Anode Voltage ⁴	15 max. KV
Average Anode Current ⁵	2.5 max. amps
Peak Anode Current	12 max. amps
Surge Anode Current for max. of 0.1 second	120 max. amps

Relation Between Condensed Mercury Temperature, Ambient Temperature and Peak Inverse Voltage⁶ (see curve)

Peak Inverse Anode Voltage	15	10	2.5 KV
Condensed Mercury Temp.	25-55	25-60	25-75°C
Ambient Temp. ⁷	15-35	15-40	15-55°C

MAXIMUM OPERATING CONDITIONS

PEAK INVERSE ANODE VOLTAGE = 15 KV

(Transformer regulation and tube voltage drop are not included)

Circuit Diagram	Type of Circuit	Max trans- former sec. rms voltage (V _{tr}) KV	DC output voltage to filter (V _o) KV	Max DC out- put current to filter (I _o) Amps	Max DC out- put to filter (% KW
a.	Single-phase full-wave, 2 tubes	5.3	4.8	5	24
b.	Single-phase full-wave, 4 tubes	10.6	9.6	5	48
c.	Three-phase half-wave, 3 tubes	6.1	7.2	7.5	54
d.	Three-phase, double Y, 6 tubes parallel with balance coil	5.3	6.2	15	93
e.	Three-phase full-wave, 6 tubes	10.6	14.4	7.5	108

⁴ For supply frequency up to 150 cycles per second.

⁵ Averaged over 10-sec. interval.

⁶ If the equipment is started at most twice daily it is permissible to apply high voltage at a condensed mercury temperature of 20°C.

⁷ With natural cooling, approx. values.

¹ For optimum performance, a phase shift of 90° ± 30° between the anode and filament voltages and use of a center tapped filament transformer are recommended.

² For average conditions, e.g. temperatures within limits and proper distribution of mercury. To insure proper distribution of mercury, upon installation and after a long interruption of service, a longer heating time is required before anode voltage is applied. In general, a time of 30 minutes will be sufficient.

³ Measured at an average anode current of 3 amps.

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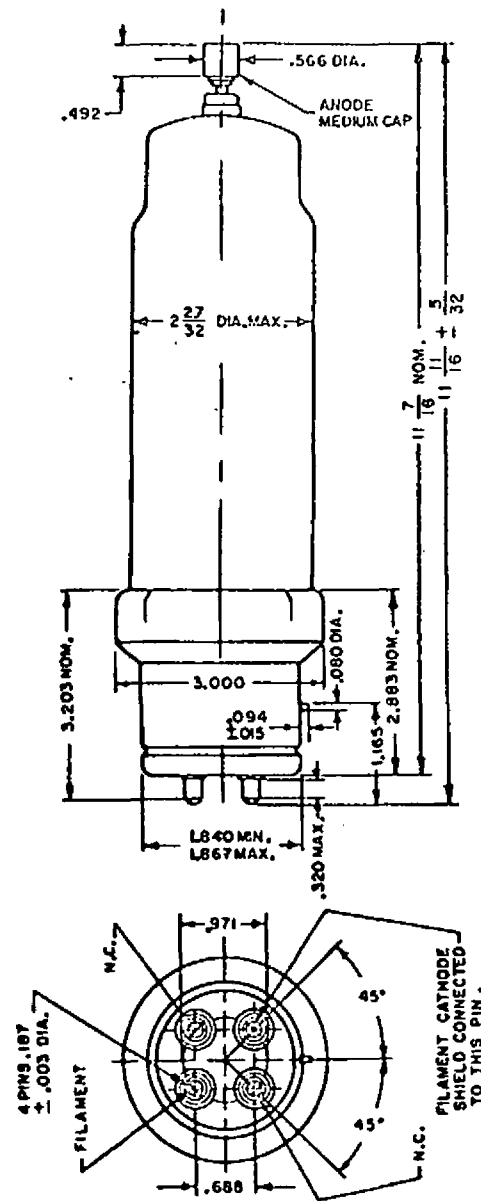
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TYPICAL OPERATING CONDITIONS
PEAK INVERSE VOLTAGE = MAX. 15 KV ⁸

Circuit Diagram	Type of Circuit	No load trans- former sec. rms voltage (Vtr) KV	DC output voltage to load ⁰ (Vo ₁) KV	Max DC out- put current (Io) Amps	DC output to load (Wo ₁) KW
a.	Single-phase full-wave, 2 tubes	4.80	4.0	5	20
b.	Single-phase full-wave, 4 tubes	9.60	8.0	5	40
c.	Three-phase, half-wave, 3 tubes	5.55	6.0	7.5	45
→ d.	Three-phase, double Y, 6 tubes	4.80	5.15	15	77.25
→ e.	Three-phase full-wave, 6 tubes	9.60	12.0	7.5	90

⁸ This value corresponds to a nominal peak inverse anode voltage of 13.6 KV, allowing a line fluctuation of $\pm 10\%$.

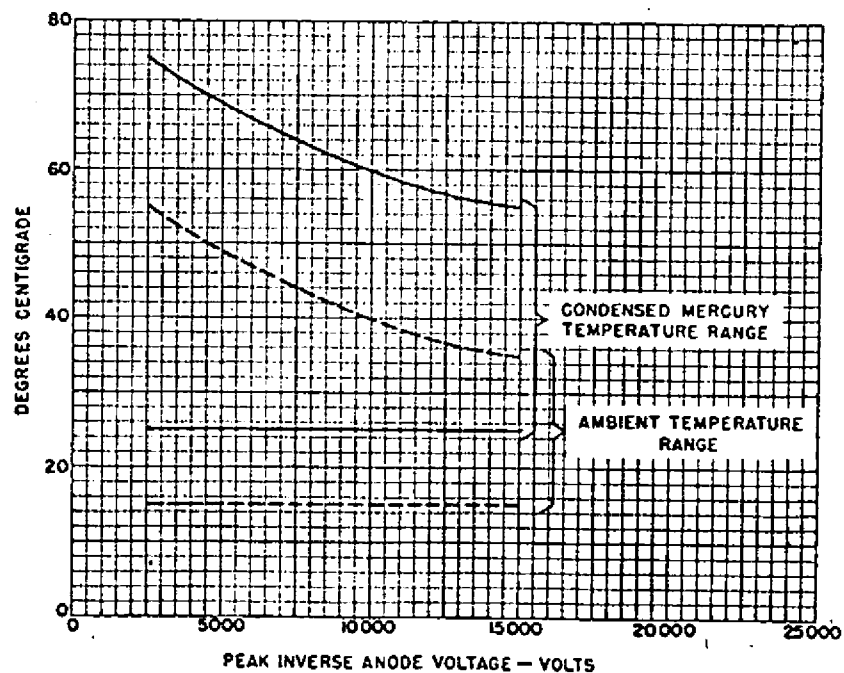
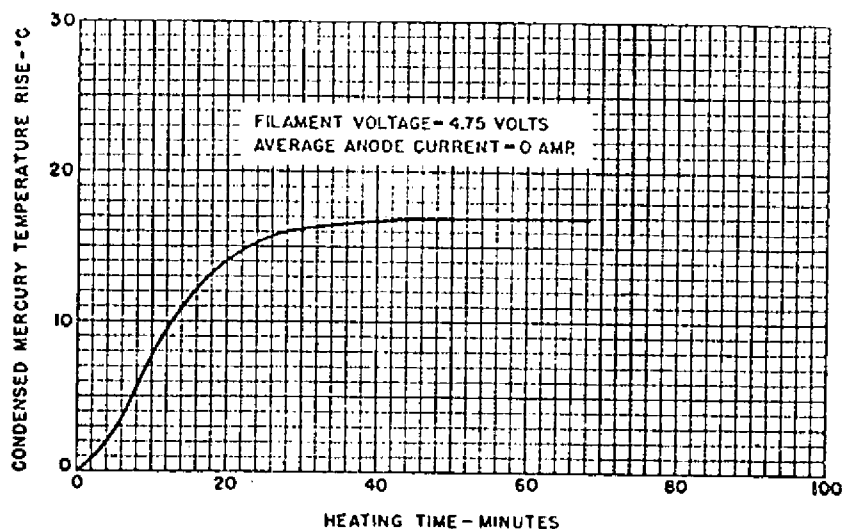
⁹ Tube voltage drop and losses in transformer, filter, ammeter, etc. amounting to 8% of V_{o1} have already been deducted.



JUNBO 4 PIN BASE

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RECTIFIER CIRCUIT	Conditions assumed for following relations	FIG. A	FIG. B	FIG. C	FIG. D	FIG. E
SINGLE PHASE FULL-WAVE 2 TUBES	1. Sine-Wave Supply 2. Balanced Phase Voltages 3. Zero Tube Drop 4. Pure Resistance Load 5. No Filter Used					
E Average		.450 E_{rms} .318 E_{max}	.900 E_{rms} .636 E_{max}	1.170 E_{rms} .827 E_{max}	1.170 E_{rms} .827 E_{max}	2.34 E_{rms} 1.65 E_{max}
E Inverse		3.14 E_{avg}	1.57 E_{avg}	2.09 E_{avg}	2.09 E_{avg}	1.045 E_{avg}
I Average		.636 I_{max}	.636 I_{max}	.718 I_{max}	1.91 I_{max}	.955 I_{max}
Ripple Frequency		2 X Supply Freq.	2 X Supply Freq.	3 X Supply Freq.	6 X Supply Freq.	6 X Supply Freq.
Ripple Voltage (Rms)		48.3%	48.3%	18.3%	4.2%	4.2%
† Ratio Secondary Kva D.C. Output/Kw Primary Kva		1.57	1.11	1.71	1.48	1.05
† Ratio D.C. Output/Kw		1.11	1.11	1.21	1.05	1.05

NOTE: All rectifier filaments supplied by single phase transformers, with secondaries isolated for voltages greater than the Maximum Peak Inverse Voltage.

† These ratios assume that a choke input filter is used to maintain the output current substantially constant.