

Half-Wave Mercury-Vapor Rectifier

GENERAL DATA

Electrical:

Filament, Coated:

Voltage (AC) $5.0 \pm 5\%$ volts

Current at filament volts = 5.0 10 amp

Minimum heating time at rated voltage . . . 30 sec

Peak Tube Voltage Drop. . . . See *Characteristics Range Values*

Mechanical:

Operating Position. Vertical, base down

Maximum Overall Length. $10-13/32"$

Seated Length. $9-7/32" \pm 7/16"$

Maximum Diameter. $2-5/8"$

Weight (Approx.). 9 oz

Bulb. T20

Cap Medium (JEDEC No. C1-5) ←

Cap Connector Millen No. 36011, or equivalent

Socket. Johnson No. 123-206, or equivalent

Base. Large-Shell Super-Jumbo 4-Pin

with Bayonet (JEDEC No. A4-88),

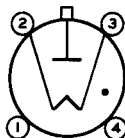
or Large-Metal-Shell Super-Jumbo 4-Pin

with Bayonet (JEDEC No. A4-18)

Basing Designation for BOTTOM VIEW. 2P

Pin 1—No Internal
Connection

Pin 2—Filament,
Cathode
Shield



Pin 3—Filament

Pin 4—No Internal
Connection

Cap—Anode

Temperature Control:

Heating—When the ambient temperature is so low that the normal rise of condensed-mercury temperature above the ambient temperature will not bring the condensed-mercury temperature up to the minimum value of the operating ranges specified under *Maximum Ratings*, some form of heat-conserving enclosure or auxiliary heater will be required.

Cooling—When the operating conditions are such that the maximum value of the operating condensed-mercury-temperature range is exceeded, provision should be made for forced-air cooling sufficient to prevent exceeding the maximum value.

Temperature Rise of Condensed Mercury to Equilibrium
Above Ambient Temperature (Approx.):

No load^a. 13 °C

Full load^b. 18.5 °C

← Indicates a change.



HALF-WAVE RECTIFIER — In Phase Operation^c**Maximum Ratings, Absolute-Maximum Values:***For supply frequency of 60 cps***Operating Condensed-Mercury-
Temperature Range****20 to 60 °C 20 to 55 °C 20 to 50 °C****PEAK INVERSE****ANODE VOLTAGE. 10000 max. 15000 max. 20000 max. volts****ANODE CURRENT:****Peak 8.3 max. 8.3 max. 8.3 max. amp****Averaged^d 1.8 max. 1.8 max. 1.8 max. amp****Fault, for
duration of
0.1 second****max. 100 max. 100 max. 100 max. amp****HALF-WAVE RECTIFIER — Quadrature Operation^e****Maximum Ratings, Absolute-Maximum Values:***For supply frequency of 60 cps***Operating Condensed-Mercury-
Temperature Range****20 to 60 °C 20 to 55 °C 20 to 50 °C****PEAK INVERSE****ANODE VOLTAGE. 10000 max. 15000 max. 20000 max. volts****ANODE CURRENT:****Peak 11.5 max. 11.5 max. 11.5 max. amp****Averaged^d 2.5 max. 2.5 max. 2.5 max. amp****Fault, for
duration of
0.1 second****max. 100 max. 100 max. 100 max. amp**^a With 4.75 volts rms on filament, and no heat-conserving enclosure.^b With 5.25 volts rms on filament, quadrature operation, average anode amperes = 2.5, and no heat-conserving enclosure.^c Filament voltage in phase with anode voltage.^d Averaged over any period of 20 seconds maximum.^e Filament voltage out of phase (60° to 120°) with anode voltage.**CHARACTERISTICS RANGE VALUES^f FOR EQUIPMENT DESIGN****Note Min. Max.****Filament Current. 1 9 11 amp****Critical Anode Voltage. 2 10 100 volts****Peak Tube Voltage Drop. 3 — 25 volts****Note 1: With 5 volts rms on filament.****Note 2: With 5 volts rms on filament, and condensed-mercury temperature of 20° C.****Note 3: With 5 volts rms on filament, condensed-mercury temperature of 35 ± 5° C, peak anode current of 11.5 amperes provided by half-cycle pulse from a 60-cps sine wave and recurring approximately once per second. Tube drop is measured by an oscilloscope connected between anode and center-tap of filament transformer.**^f Throughout tube life.

For Circuit Figures, see Front of this Section

CIRCUIT	MAX. TRANS. SEC. VOLTS (RMS) E	APPROX. DC OUTPUT VOLTS TO FILTER E _{av}	MAX. DC OUTPUT AMPERES I _{av}	MAX. DC OUTPUT KW TO FILTER P _{dc}
Fig. 1 Half-Wave Single-Phase In-Phase Operation	14000 ^g 10600 ^h 7000 ^j	6300 4700 3200	1.8 1.8 1.8	11.5 8.5 5.5
Fig. 2 Full-Wave Single-Phase In-Phase Operation	7000 ^g 5300 ^h 3500 ^j	6300 4700 3200	3.6 3.6 3.6	23 17 11
Fig. 3 Series Single-Phase In-Phase Operation	14000 ^g 10600 ^h 7000 ^j	12700 9500 6300	3.6 3.6 3.6	46 34 22
Fig. 4 Half-Wave Three-Phase In-Phase Operation	8100 ^g 6100 ^h 4000 ^j	9500 7100 4700	5.4 5.4 5.4	51 38 25
Fig. 5 Parallel Three-Phase Quadrature Operation	8100 ^g 6100 ^h 4000 ^j	9500 7100 4700	15.0 15.0 15.0	143 106 71
Fig. 6 Series Three-Phase Quadrature Operation	8100 ^g 6100 ^h 4000 ^j	19000 14200 9500	7.5 7.5 7.5	143 106 71
Fig. 7 Half-Wave Four-Phase Quadrature Operation	7000 ^g 5300 ^h 3500 ^j	9000 6700 4500	Resis- tive Load 10 10 10	Induc- tive Load 10 10 10
Fig. 8 Half-Wave Six-Phase Quadrature Operation	7000 ^g 5300 ^h 3500 ^j	9500 7100 4700	Resis- tive Load 11 11 11	Induc- tive Load 11.5 11.5 11.5

^g For maximum peak inverse anode voltage of 20000 volts, and condensed-mercury-temperature range of 20 to 50° C.

^h For maximum peak inverse anode voltage of 15000 volts, and condensed-mercury-temperature range of 20 to 55° C.

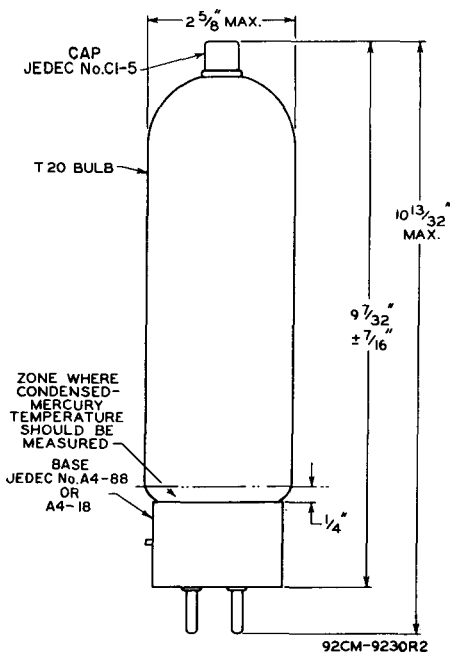
^j For maximum peak inverse anode voltage of 10000 volts, and condensed-mercury-temperature range of 20 to 60° C.



OPERATING CONSIDERATIONS

X rays are produced when the 6895 is operated with a peak inverse anode voltage above 16,000 volts (absolute value). These rays can constitute a health hazard unless the tube is adequately shielded for X-ray radiation. Although relatively simple shielding should prove adequate, make sure that it provides the required protection to the operator.

Shields and rf filter circuits should be provided for the 6895 if it is subjected to extraneous high-frequency fields during operation. These fields tend to produce breakdown effects in mercury vapor and are detrimental to tube life and performance. When shields are used, special attention must be given to providing adequate ventilation and to maintaining normal condensed-mercury temperature. Radio-frequency filters are employed to prevent damage caused by rf currents which might otherwise be fed back into the rectifier tubes.

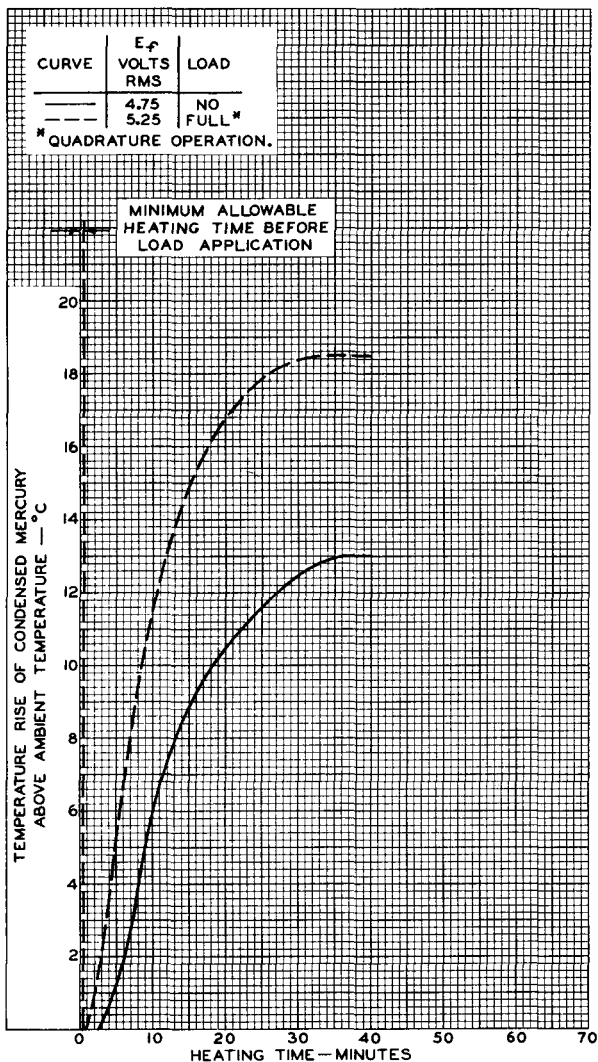




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RATE OF RISE OF COND.-MERCURY TEMPERATURE

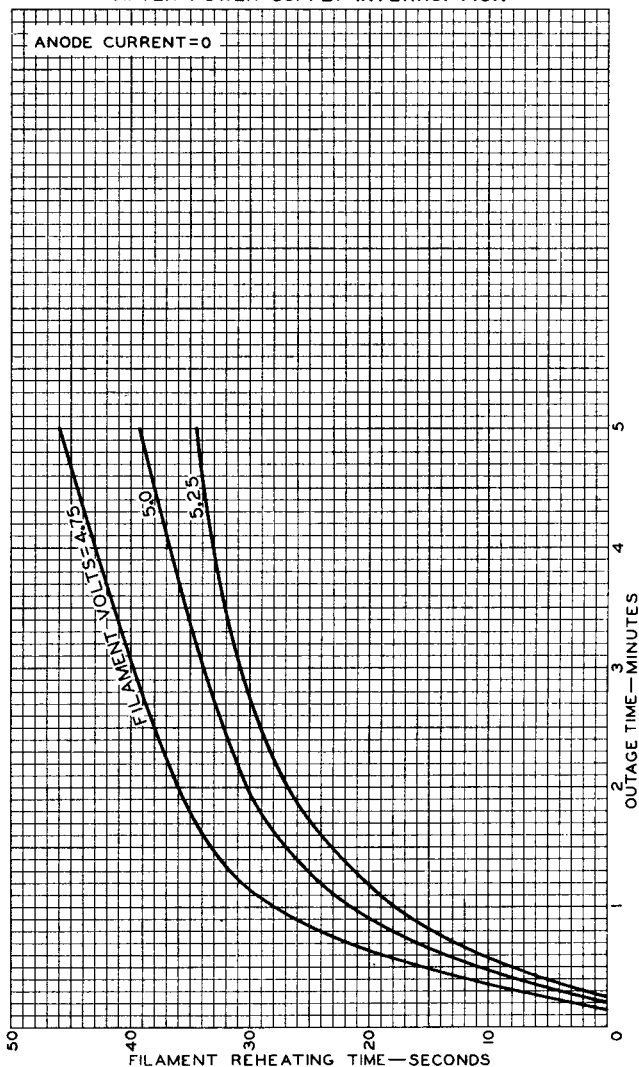


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FILAMENT REHEATING TIME REQUIRED AFTER POWER-SUPPLY INTERRUPTION



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-8300