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HALF-WAVE MERCURY-VAPOR RECTIFIER

GENERAL DATA

Electrical:

Filament, Coated:

Voltage. $5 \pm 5\%$ ac volts

Current at 5 volts 10 amp

Minimum heating time

at rated voltage 30 sec

Peak Tube Voltage

Drop (Approx.) 10 volts

Mechanical:

Operating Position Vertical, base down

Maximum Overall Length 11-7/16" →

Seated Length. 9-9/16" + 1-1/16" - 1/4" →

Maximum Diameter 3-1/8" →

Weight (Approx.) 10.8 oz →

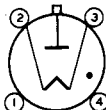
Cap. Medium (JETEC No.C1-5)

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

with Bayonet (JETEC No.A4-18)

Basing Designation for BOTTOM VIEW 2P

Pin 1—No Connection

Pin 2—Filament,
Cathode
Shield

Pin 3—Filament

Pin 4—No 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*	12	°C
Full load▲	17.5	°C

* With 4.75 volts rms on filament, and no heat-conserving enclosure.

▲ With 5.25 volts rms on filament, quadrature operation, average anode current = 2.5 amperes, and no heat-conserving enclosure.

← Indicates a change.



HALF-WAVE MERCURY-VAPOR RECTIFIER

HALF-WAVE RECTIFIER — In-Phase Operation*

Maximum Ratings, Absolute Values: For supply frequency of 60 cps

Operating Condensed-Mercury-
Temperature Range
20° to 60° C 20° to 50° C

PEAK INVERSE			
ANODE VOLTAGE.	10000 max.	15000 max.	volts
ANODE CURRENT:			
Peak	7 max.	6 max.	amp
Average**	1.75 max.	1.5 max.	amp
Fault, for dura- tion of 0.1 second maximum . . .	100 max.	100 max.	amp

HALF-WAVE RECTIFIER — Quadrature Operation**

Maximum Ratings, Absolute Values: For supply frequency of 60 cps

Operating Condensed-Mercury-
Temperature Range
20° to 60° C 20° to 50° C

PEAK INVERSE			
ANODE VOLTAGE.	10000 max.	15000 max.	volts
ANODE CURRENT:			
Peak	10 max.	10 max.	amp
Average**	2.5 max.	2.5 max.	amp
Fault, for dura- tion of 0.1 second maximum . . .	100 max.	100 max.	amp

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Filament Current	1	—	11.5	amp
Critical Anode Voltage . . .	2	—	100	volts
Peak Tube Voltage Drop . . .	3	—	16	volts

Note 1: With 5 volts rms on filament.

Note 2: With 4.75 volts rms on filament, and condensed-mercury temperature at 20° C.

Note 3: With 5 volts rms on filament, condensed-mercury temperature of 35° ± 5° C, peak anode current of 20 amperes provided by half-cycle pulse from a 60-cps sine wave and recurring approximately once a second. Tube drop is measured by an oscilloscope connected between anode and center-tap of filament transformer.

* Filament voltage in phase with anode voltage.

** Averaged over any interval of 20 seconds maximum.

*** Filament voltage out of phase (60° to 120°) with anode voltage.



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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	10600 [□] 7000 [▲]	4800 3200	1.50 1.75	7.1 5.5		
Fig. 2 Full-Wave Single-Phase In-Phase Operation	5300 [□] 3500 [▲]	4800 3200	3.00 3.50	14.2 11.0		
Fig. 3 Series Single-Phase In-Phase Operation	10600 [□] 7000 [▲]	9600 6400	3.00 3.50	28.4 22.0		
Fig. 4 Half-Wave Three-Phase In-Phase Operation	6100 [□] 4000 [▲]	7200 4800	4.50 5.25	32.2 25.0		
Fig. 5 Parallel Three-Phase Quadrature Operation	6100 [□] 4000 [▲]	7200 4800	15.0 15.0	108 72		
Fig. 6 Series Three-Phase Quadrature Operation	6100 [□] 4000 [▲]	4300 9600	7.5 7.5	108 72		
Fig. 7 Half-Wave Four-Phase Quadrature Operation	5300 [□] 3500 [▲]	6750 4500	Resis- tive Load 9.0 9.0	Induc- tive Load 10.0 10.0	Resis- tive Load 60.8 40.5	Induc- tive Load 67.5 45.0
Fig. 8 Half-Wave Six-Phase Quadrature Operation	5300 [□] 3500 [▲]	7200 4800	Resis- tive Load 9.5 9.5	Induc- tive Load 10.0 10.0	Resis- tive Load 68.4 45.6	Induc- tive Load 72.0 48.0

□ For maximum peak inverse anode voltage of 15,000 volts, and condensed-mercury-temperature range of 20° to 50° C.

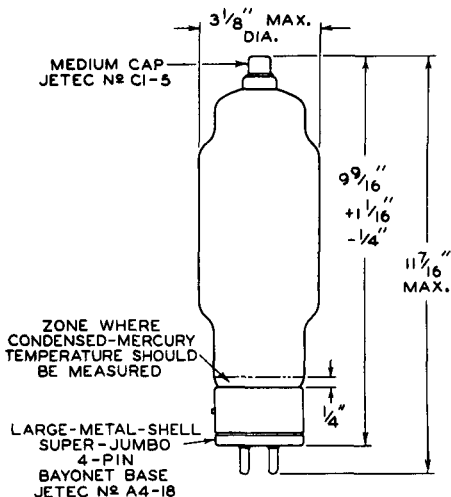
▲ For maximum peak inverse anode voltage of 10,000 volts, and condensed-mercury-temperature range of 20° to 60° C.



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OPERATING CONSIDERATIONS

Shields and rf filter circuits should be provided for the 673 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. Rf filters are employed to prevent damage caused by rf currents which might otherwise be fed back into the rectifier tubes.



92CS-6655R3



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RATE OF RISE OF COND-MERCURY TEMPERATURE

