



5822-A

# 5822-A IGNITRON

WATER-COOLED, STEEL-JACKETED, MERCURY-POOL-CATHODE  
TYPE HAVING MOUNTING PLATE FOR THERMOSTATIC CONTROL

*For intermittent rectifier and frequency-changer welder service*

## GENERAL DATA

### Electrical:

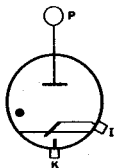
Cathode Excitation. . . . .	Cyclic
Cathode-Spot Starting. . . . .	By Ignitor
Minimum Requirements for Cathode Excitation:	
Peak ignitor voltage required to fire. . . . .	200 volts
Peak ignitor current required to fire. . . . .	30 amp
Starting time at required voltage or current. . . . .	100 $\mu$ sec
Tube Voltage Drop:	
At peak anode current of 1500 amperes. . . . .	25 volts

### Mechanical:

Operating Position. . . . .	Vertical, flexible lead up
Maximum Overall Length (including flexible lead). . . . .	27-1/4"
Maximum Radius (including water connections). . . . .	3-5/8"
Weight. . . . .	8.25 lbs
Terminal Connections (See Dimensional Outline):	

P - Anode  
Terminal  
(Flexible  
lead)

K - Cathode  
Terminal  
(Bar oppo-  
site anode  
terminal)



I - Ignitor  
Terminal  
(Within  
jacket  
skirt at  
cathode  
end)

### Cooling:

Type. . . . .	Water
Minimum inlet water temperature. . . . .	10 $^{\circ}$ C
Maximum outlet water temperature. . . . .	35 $^{\circ}$ C
Minimum water flow. . . . .	1.5 gpm
Maximum water-temperature rise. . . . .	6 $^{\circ}$ C
Maximum pressure drop. . . . .	5 psi

## INTERMITTENT RECTIFIER SERVICE and FREQUENCY-CHANGER WELDER SERVICE

Maximum Ratings, Absolute-Maximum Values:

*For zero phase-control angle and  
frequencies from 50 to 60 cps*

### RATING I

#### PEAK ANODE VOLTAGE:

Forward. . . . .	1200 max.	1200 max.	volts
Inverse. . . . .	1200 max.	1200 max.	volts

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### ANODE CURRENT:

Peak . . . . .	420 max.	1500 max.	amp
Average (Averaged over any interval of 6.25 seconds maximum) . . . . .	70 max.	20 max.	amp
Average (Averaged over any interval of 0.2 second maximum) . . . . .	70 max.	250 max.	amp
Fault, for duration of 0.15 second maximum. . . . .	18750 max.	18750 max.	amp

### RATING II

#### PEAK ANODE VOLTAGE:

Forward . . . . .	1500 max.	1500 max.	volts
Inverse . . . . .	1500 max.	1500 max.	volts

#### ANODE CURRENT:

Peak . . . . .	336 max.	1200 max.	amp
Average (Averaged over any interval of 6.25 seconds maximum) . . . . .	56 max.	16 max.	amp
Average (Averaged over any interval of 0.2 second maximum) . . . . .	56 max.	200 max.	amp
Fault, for duration of 0.15 second maximum. . . . .	15000 max.	15000 max.	amp

### IGNITOR

#### Maximum Ratings, Absolute-Maximum Values:

#### PEAK IGNITOR VOLTAGE:

Positive . . . . .	Equal to anode	volts
Negative . . . . .	5 max.	volts

#### IGNITOR CURRENT:

Peak . . . . .	100 max.	amp
Average (Averaged over any interval of 5 seconds maximum) . . . . .	1 max.	amp
RMS . . . . .	10 max.	amp

### OPERATING CONSIDERATIONS

The 5822-A is equipped with a mounting plate for mounting a thermostatic control calibrated either for controlling the flow of cooling water through the water jacket, or for protection of the ignitron against overheating.

When the cooling water is circulated successively through the water jackets of two or more ignitrons, the water-saving thermostat, if used, should be mounted on the ignitron connected directly to the water supply.

The water-saving thermostat, which has normally open contacts, is calibrated to close a circuit energizing a solenoid valve in the water-supply line and thus permit water



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flow to start when the temperature of the thermostat mounting plate exceeds approximately  $35^{\circ}$  C. Because of the lag between the heating of the ignitron envelope and the functioning of the water-saving thermostat to start water flow through the water jackets, the ignitron may overheat before the flow of cooling water starts.

Such overheating can be prevented by the use of an auxiliary contactor shunted across the contacts of the water-saving thermostat and actuated by the welding-control switch. The contactor causes the solenoid valve in the water-supply line to open as soon as welding current flows.

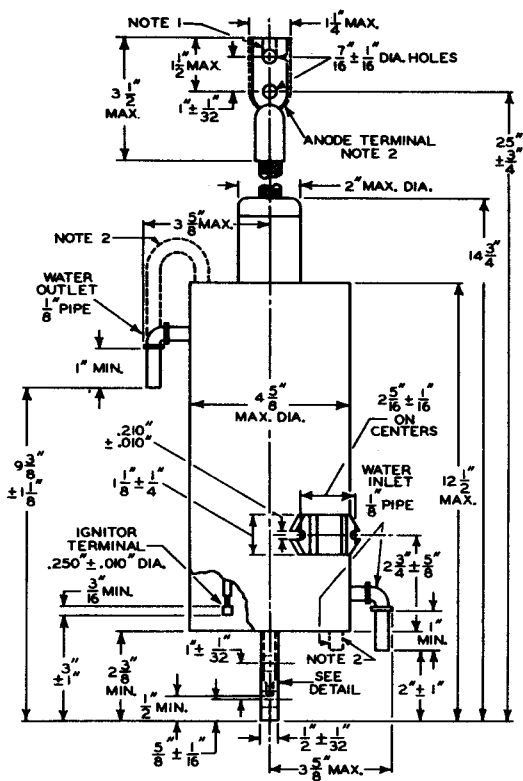
When a *protective thermostat* is used, it should be mounted on an ignitron from which the cooling water discharges into the drain. The protective thermostat is calibrated to open a set of normally closed contacts at a jacket temperature of approximately  $52^{\circ}$  C. The opening of these contacts causes a protective device to function. This device may be a relay opening the ignitor firing controls, or preferably, a circuit breaker which removes power from the ignitrons.

Care must be taken to insure that the water jacket of each ignitron is completely filled before power is applied. Tube operation with a partially filled water jacket may cause abnormal heating of the tube envelope with resultant arc-back which impairs tube life. It is also necessary to arrange the cooling system so as to prevent any draining of the water jackets when the flow of water ceases.

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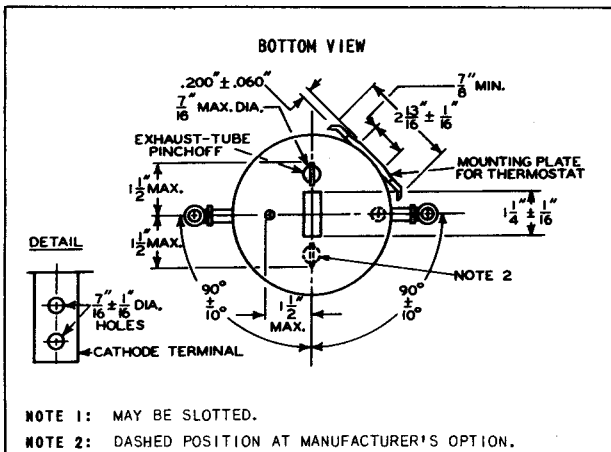
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**RATING CHART**  
**FREQUENCY-CHANGER WELDER SERVICE**

