

GL-7681 IGNITRON

FREQUENCY-CHANGER WELDER SERVICE

The GL-7681 is a sealed, stainless-steel-jacketed, water-cooled, mercury-pool tube for use in electronic-contact and resistance-welding-control service, both single-phase and three-phase.

In AC-control service two tubes in an inverse-parallel connection will control 1800 kilovoltamperes at 440 to 600 volts RMS, 25 to 60 cycles. Six tubes will control 2250

AC-CONTROL SERVICE

amperes peak at 1200 volts inverse in frequency-changer welder service.

A thermostat mounting plate, thermally coupled to the mercury-condensing surface of the tube, provides protection against excessive temperature or temperature control through regulation of the water flow.

Electrical	
Electrodes	
Anodes	1
Cathodes	1
Ignitors	1
Deionization Baffles	1
Arc Drop	
At 5000 Amperes Peak	30 Volts
At 500 Amperes Peak	16 Volts
Mechanical	
Water Jackets—Stainless Steel	
Mounting—Vertical, Cathode Terminal Down	
Net Weight, approximate	15 Pounds

Thermal	
Cooling—Liquid. If other than water is used, correct for conductivity, specific heat and viscosity.	
Inlet Water Temperature, minimum	6 C
Outlet Water Temperature, maximum	45 C
Water Flow, minimum	
At Continuous Rated Average Current	2.0 Gallons per Minute
At No Load	0
Note: Flow at intermediate loads may be decreased to an amount proportional to load. Water flow should be continued for 30 minutes after load.	
Characteristics for Water Cooling at Rated Minimum Flow	
Water Temperature Rise at Maximum Current	9 C
Water Pressure Drop at 2.0 Gallons per Minute, Maximum	5 pounds per square inch

MAXIMUM RATINGS AND TYPICAL OPERATION

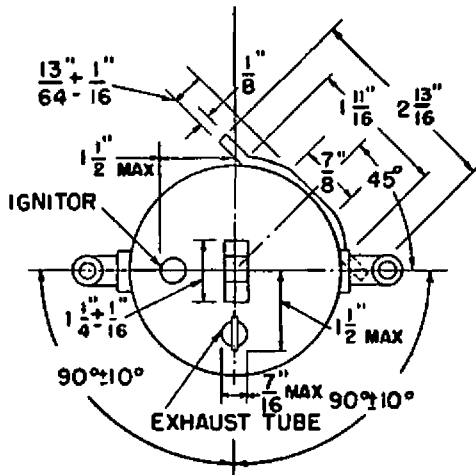
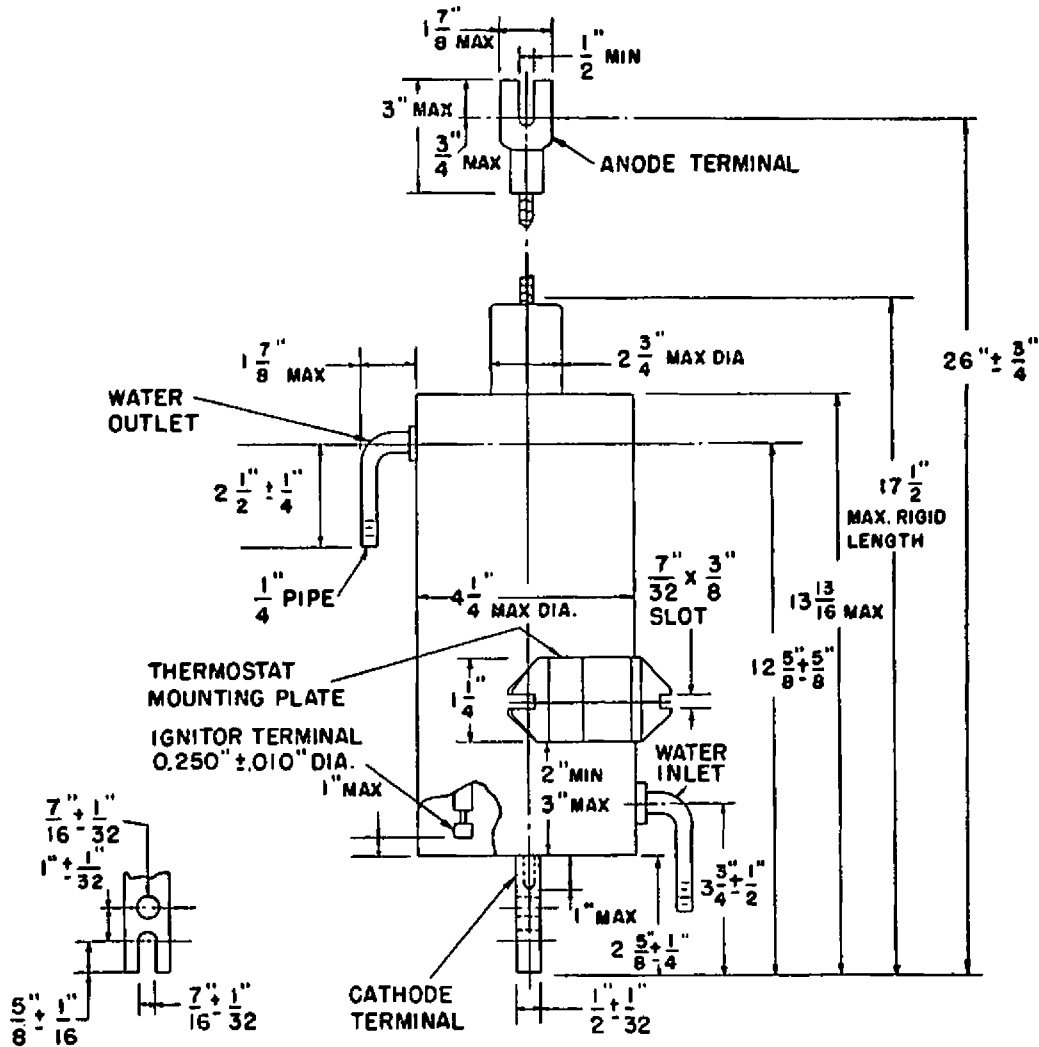
AC-Control Service*		
(Two Tubes in Inverse Parallel, Ratings per Tube)		
Voltage	500-600	Volts RMS
Maximum Demand	1800†	Kilovoltamperes
Average Current at Maximum Demand	113.5	Amperes
Maximum Average Current	210	Amperes
Demand at Maximum Average Current	600	Kilovoltamperes
Maximum Averaging Time		
At 250 Volts RMS	9.5	Seconds
At 500 Volts RMS	7.1	Seconds
Maximum Peak Fault Current		
At 250 Volts	20,040	Amperes
At 600 Volts	8400	Amperes
Frequency Range	25-60	Cycles per second
Frequency-Changer-Welder Service		
(Ratings are for zero phase-control angle.)		
Maximum Peak Anode Voltage		
Inverse and Forward	1200 1500	Volts
Maximum Anode Current		
Peak	2250 1800	Amperes
Corresponding Average	30 24	Amperes

Average	105	84	Amperes
Corresponding Peak	630	502	Amperes
Maximum Averaging Time	6.25	6.25	Seconds
Ratio of Average to Peak Current			
.....	0.166	0.166	
Maximum Averaging Time	0.2	0.2	Seconds
Ratio of Fault to Maximum Peak			
Current	12.5	12.5	
Maximum Duration of Fault			
Current	0.15	0.15	Seconds
Frequency Range	50-60	50-60	Cycles per second
Cathode Excitation Requirements			
Ignitor Voltage Required to Fire	200		Volts
Ignitor Current Required to Fire	30		Amperes
Starting Time at Required Voltage or			
Current	100		Microseconds
Ignitor			
Maximum Voltage			
Positive—Anode Voltage			
Negative	5		Volts
Maximum Current			
Peak	100		Amperes
RMS	10		Amperes
Average	1		Amperes
Maximum Averaging Time	5		Seconds

* RMS demand voltage, current, and kilovolt-ampere demand are all on the basis of full-cycle conduction (no phase delay) regardless of whether or not phase control is used. Straight-line interpolation on log-log paper is allowed between corresponding points.

† Maximum demand current for 250 volts RMS is 4800 amperes. For voltages between 250 and 500 use proportional values between 4800 and 3600 amperes.





NOTE: ENVELOPE IS
AT CATHODE
POTENTIAL