



IGNITRON

The GL-5553-A ignitron is a sealed, stainless-steel-jacketed, water-cooled, mercury-pool tube designed primarily for resistance-welding-control service. In this service, two tubes in the inverse-parallel connection will control 2400 kilovolt-amperes at voltages of 250 to 600 volts over the frequency range of 25 to 60 cycles. The ability of this tube to carry very high peak currents for short

periods makes it especially suited to such service.

Ease of installation, economical use of space, and reliability of operation are assured by design and construction features inherent in the steel-jacketed construction.

The GL-5553-A ignitron is equivalent to a 1200-ampere magnetic contactor.

TECHNICAL INFORMATION

GENERAL

Electrical

Cathode Excitation—Cyclic		
Cathode Spot Starting Ignitor		
Number of Electrodes		
Main Anodes.....	1	
Main Cathodes.....	1	
Ignitors.....	1	
Arc Drop at 13,600 Peak Amperes.....	36	Volts
Arc Drop at 1115 Peak Amperes.....	17	Volts



GENERAL  ELECTRIC

Supersedes ET1-1118, dated 3-50

TECHNICAL INFORMATION (CONT'D)

Electrical

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

Mechanical

Envelope Material—Metal

Net Weight.....	21	Pounds
-----------------	----	--------

Thermal

Type of Cooling—Water

Inlet Water Temperature, minimum.....	10	C
Inlet Water Temperature, maximum.....	40	C
Water Flow, minimum.....	3.0	Gallons per Minute

Characteristics for Water Cooling at Rated Minimum Flow

Water Temperature Rise, maximum.....	9	C
Pressure Drop at 3 Gallons per Minute, maximum.....	5.1	Pounds per Square Inch

MAXIMUM RATINGS AND TYPICAL OPERATION

Power-Rectifier Service, Intermittent Duty

Ratings are for Zero Phase-Control Angle—See Curve for Details.

Maximum Peak Anode Voltage

Inverse.....	600	1200	1500	Volts
Forward.....	600	1200	1500	Volts

Maximum Anode Current

Peak.....	4000	3000	2400	Amperes
Corresponding Average.....	54	40	32	Amperes
Average.....	190	140	112	Amperes
Corresponding Peak.....	1140	840	672	Amperes
Maximum Averaging Time.....	6.23	6.25	6.25	Seconds

Ratio of Average to Peak Current, maximum

Averaging Time 0.2 Second.....	0.166	0.166	0.166	
--------------------------------	-------	-------	-------	--

Ratio of Fault to Maximum Peak Current.....

	12.5	12.5	12.5	
--	------	------	------	--

Maximum Duration of Fault Current.....

	0.15	0.15	0.15	Seconds
--	------	------	------	---------

Frequency Range.....

	50-60	50-60	50-60	Cycles per Second
--	-------	-------	-------	-------------------

Resistance-Welding-Control Service*

Two Tubes in Inverse Parallel, Ratings Per Tube.

Voltage Range.....	250 to 600	Volts RMS
Maximum Demand.....	2400	Kilovolt-Amperes
Average Current at Maximum Demand.....	192	Amperes
Maximum Average Current.....	355	Amperes
Demand at Maximum Average Current.....	800	Kilovolt-Amperes
Maximum Averaging Time at 250 Volts RMS.....	11.0	Seconds
Maximum Averaging Time at 600 Volts RMS.....	4.6	Seconds
Maximum Peak Fault Current at 250 Volts.....	27,000	Amperes
Maximum Peak Fault Current at 600 Volts.....	11,200	Amperes

Ignitor

Maximum Voltage

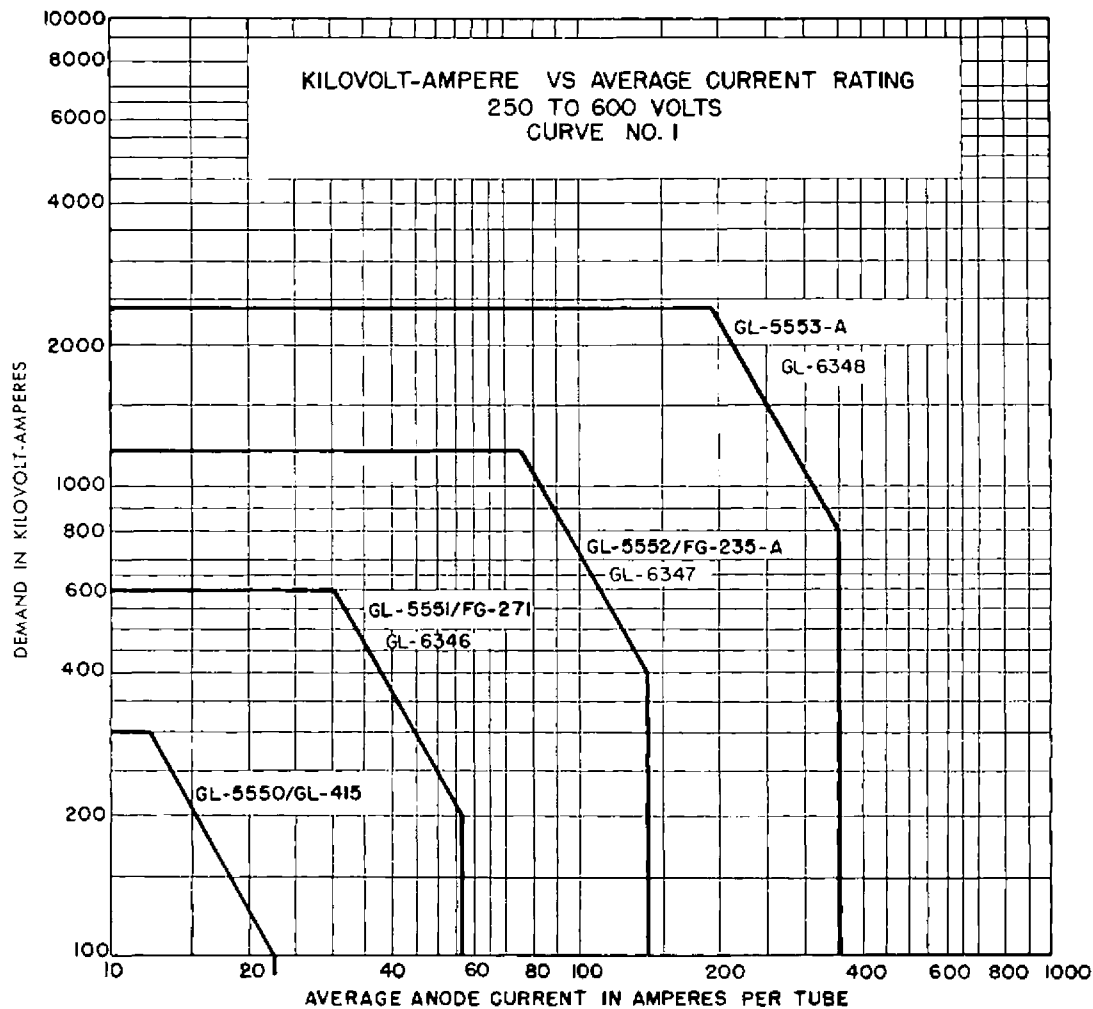
Positive—Anode Voltage	
Negative.....	5 Volts

Maximum Current

Peak.....	100	Amperes
Root Mean Square.....	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. For voltages below the minimum, the minimum-voltage current rating applies. With the use of log-log paper straight-line interpolation between tabulated points may be used for other detailed ratings of: Demand kva vs average anode current. Maximum averaging time vs anode voltage.

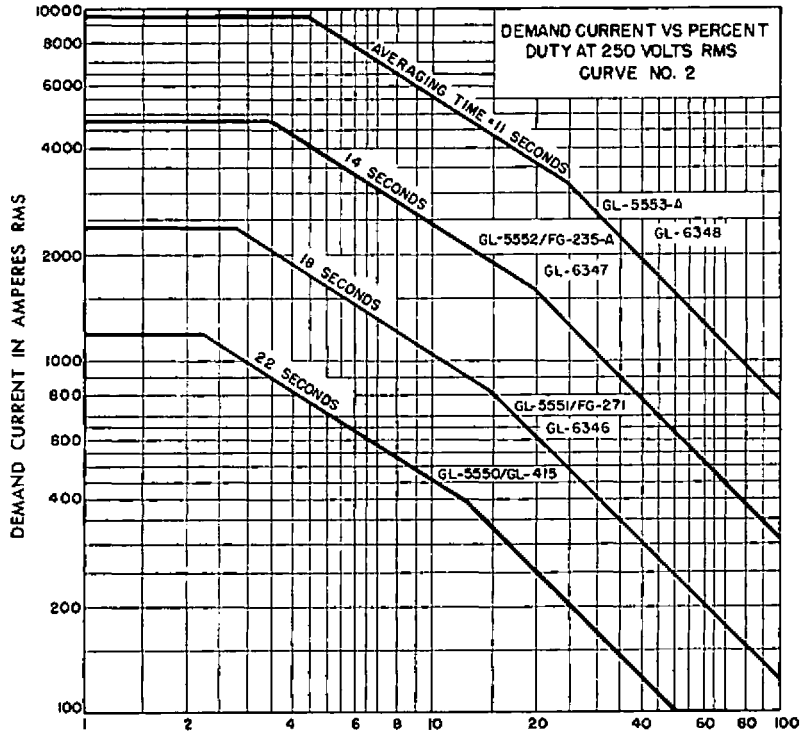
CURVES K-69087-72A217, K-69087-72A218, AND K-69087-72A219
DO NOT APPLY FOR INTERMITTENT-RECTIFIER SERVICE



K-69087-72A217

5-25-54

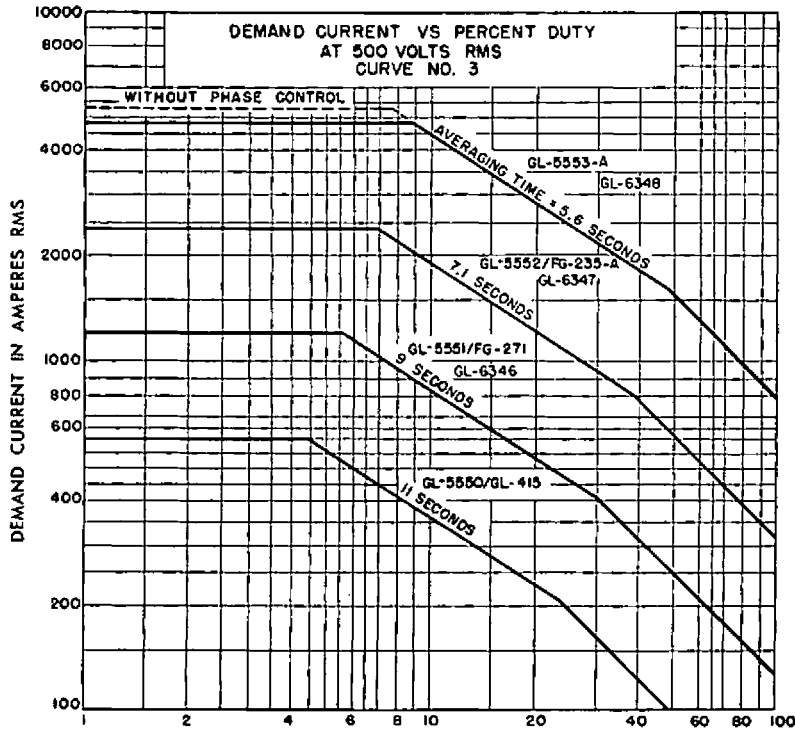
Note: For capacitor-corrected welder service, this curve may be used to 2000 volts rms to allow for the additional voltage caused by the presence of the capacitor.



DUTY IN PERCENTAGE
2 TUBES CONNECTED IN INVERSE PARALLEL

K-69087-72A218

5-25-54

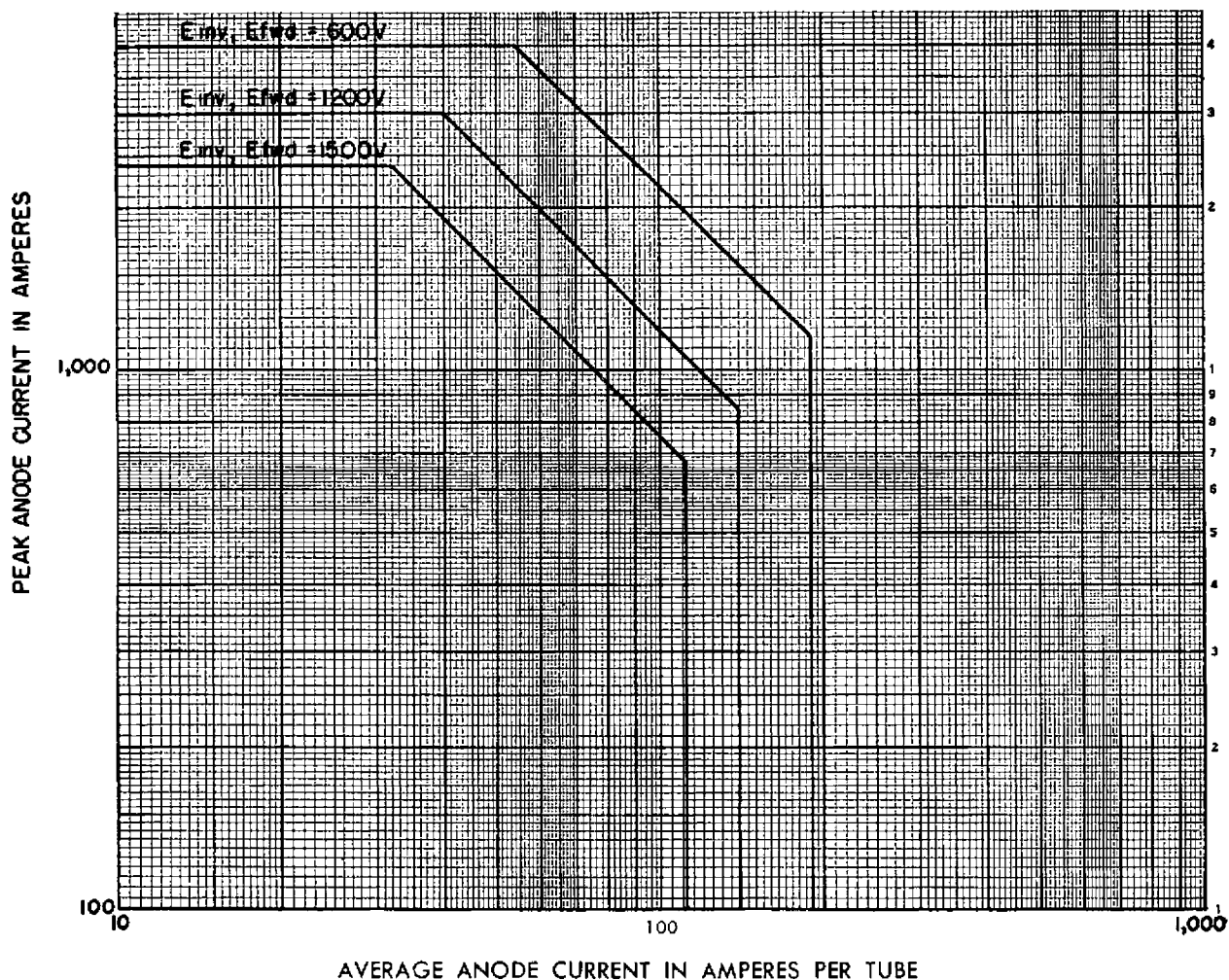


DUTY IN PERCENTAGE
2 TUBES CONNECTED IN INVERSE PARALLEL

K-69087-72A219

5-25-54

POWER RECTIFIER RATING—INTERMITTENT SERVICE



K-69087-72A630

8-21-53

MAXIMUM AVERAGING TIME=6.25 SECONDS

$$\frac{1 \text{ Average}}{1 \text{ Peak}} \text{ Maximum Averaging Time } 0.2 \text{ Second} = 0.166 \text{ Maximum}$$

$$\frac{1 \text{ Fault}}{1 \text{ Peak Max}} \text{ Maximum Duration of Fault Current } 0.15 \text{ Second} = 12.5 \text{ Maximum}$$

GL-5553-A

ET-T1120

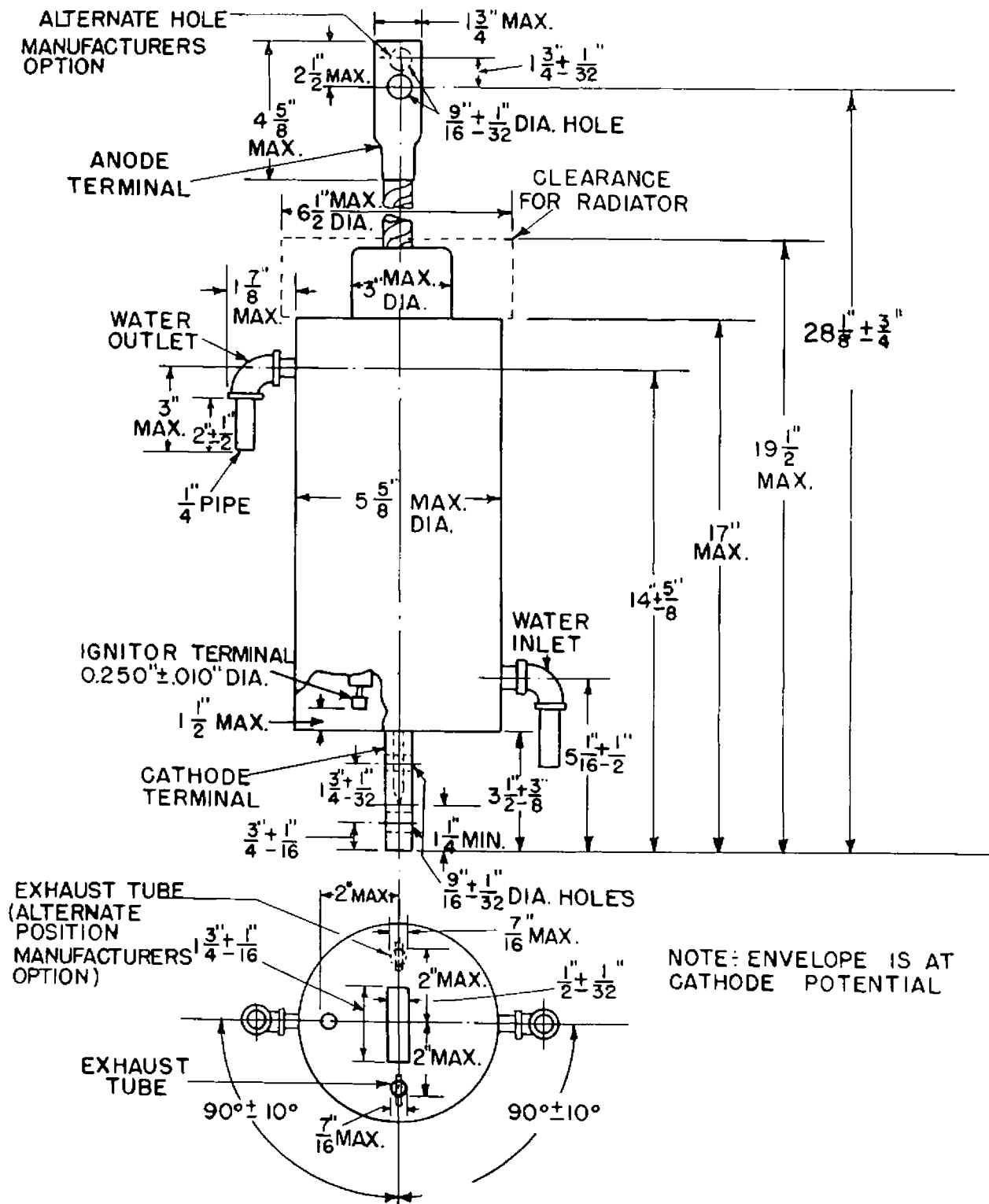
PAGE 6

6-54



K-69087-72A513

8-21-53



TUBE DEPARTMENT
GENERAL  **ELECTRIC**
Schenectady 5, N. Y.