ITT ELECTRON TECHNOLOGY
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F-6803
POWER TRIODE

DESCRIPTION:

The F-6803 is a three electrode tube designed for use as a radio frequency amplifier, oscillator, or Class B modulator. The anode is water cooled and is capable of dissipating 80 kilowatts during Continuous Commercial Service. The cathode is a thoriated tungsten filament of free hung design and filament excitation of 3 phase wye is required. Maximum ratings apply up to 22 megacycles.

GENERAL CHARACTERISTICS:

Electrical

Filament Voltage, Line to Line	11.0	Volts
Filament Current, Per Phase	190	Amperes
Filament Starting Current	600	Amperes
Filament Heating Time	15	Seconds
Amplification Factor		
E_c = -100 v; I_b = 2.0 amperes	41	
Peak Cathode Current (Note 1)	100	Amperes
Direct Inter-Electrode Capacitances		
Grid-Plate	37	µµf
Grid-Filament	75	µµf
Plate-Filament	2.0	µµf

Mechanical

Mounting Position	Vertical, Anode Down			
Type of Cooling	Water And Forced Air			
Plate Dissipation	80	60	45	KW
Water Flow*	30	22	16	GPM
Water Jacket Pressure Drop	15	9	4.5	PSI
Maximum Outgoing Water Temperature	70°C			
Air Flow on Bulb**	250 CFM			
Glass Temperature (at hottest part)	180°C, Maximum			
Net Weight (Approximate)	25 Pounds			

* Using water jacket RT-54319, Type A.

** Operation at frequencies above 2 mc may require air flow onto the dish center in order to hold the temperature of the seals and dish below 180°C. The blower required should deliver up to 250 cfm through a 3" diameter nozzle.

Note 1: Represents maximum usable cathode current (plate current plus grid current) for any condition of operation.

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

Audio-Frequency Power Amplifier and Modulator - Class B

Maximum Ratings, Absolute Values

D-C Plate Voltage	19,000	Volts
Max. Signal D-C Plate Current (Note 2)	9	Amperes
Max. Signal Plate Input (Note 2)	150	Kilowatts
Plate Dissipation (Note 2)	70	Kilowatts

Typical Operation

(Unless otherwise specified, values are for two tubes)

D-C Plate Voltage	14,000	Volts
D-C Grid Voltage	-300	Volts
Peak A-F Grid-to-Grid Voltage	1,600	Volts
Zero Signal D-C Plate Current	2	Amperes
Max. Signal D-C Plate Current	16	Amperes
Effective Load Resistance, Plate-to-Plate	2,250	Ohms
Max. Signal Driving Power (Approximate)	1,500	Watts
Max. Signal Power Output (Approximate)	150	Kilowatts

Radio-Frequency Power Amplifier - Class B

(Carrier conditions per tube for use with a maximum modulation factor of 1.0)

Maximum Ratings, Absolute Values

D-C Plate Voltage (Note 3)	17,500	Volts
D-C Plate Current	7	Amperes
Plate Input	100	Kilowatts
Plate Dissipation	70	Kilowatts

Typical Operation

D-C Plate Voltage	15,000	Volts
D-C Grid Voltage	-375	Volts
Peak R-F Grid Voltage	500	Volts
D-C Plate Current	4.9	Amperes
D-C Grid Current	0.0	Amperes
Driving Power (Approximate) (Note 4)	770	Watts
Power Output (Approximate)	25	Kilowatts

Note 2: Averaged over any audio frequency cycle of sine-wave form.

Note 3: The tube may be operated up to 19,000 D-C plate volts at frequencies of 2 mc or less.

Note 4: At crest of audio-frequency cycle with modulation factor of 1.0.

Plate-Modulated Radio-Frequency Power Amplifier - Class C Telephony

(Carrier conditions per tube for use with a maximum modulation factor of 1.0)

Maximum Ratings, Absolute Values

D-C Plate Voltage	14,000	Volts
D-C Grid Voltage	-3,000	Volts
D-C Plate Current	12	Amperes
D-C Grid Current	1.5	Amperes
Plate Input	140	Kilowatts
Plate Dissipation	47	Kilowatts

Typical Operation

D-C Plate Voltage	14,000	Volts
D-C Grid Voltage	-800	Volts
Peak R-F Grid Voltage	1,550	Volts
D-C Plate Current	10	Amperes
D-C Grid Current	1.4	Amperes
Driving Power (Approximate)	2	Kilowatts
Power Output (Approximate)	104	Kilowatts

Radio-Frequency Power Amplifier and Oscillator - Class C Telegraphy

(Key down conditions per tube without amplitude modulation) (Note 5)

Maximum Ratings, Absolute Values

D-C Plate Voltage (Note 6)	17,500	Volts
D-C Grid Voltage	-3,000	Volts
D-C Plate Current	15	Amperes
D-C Grid Current	1.5	Amperes
Plate Input	175	Kilowatts
Plate Dissipation	70	Kilowatts

Note 5: Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 percent of carrier conditions.

Note 6: The tube may be operated up to 19,000 D-C plate volts at frequencies of 2 mc or less.

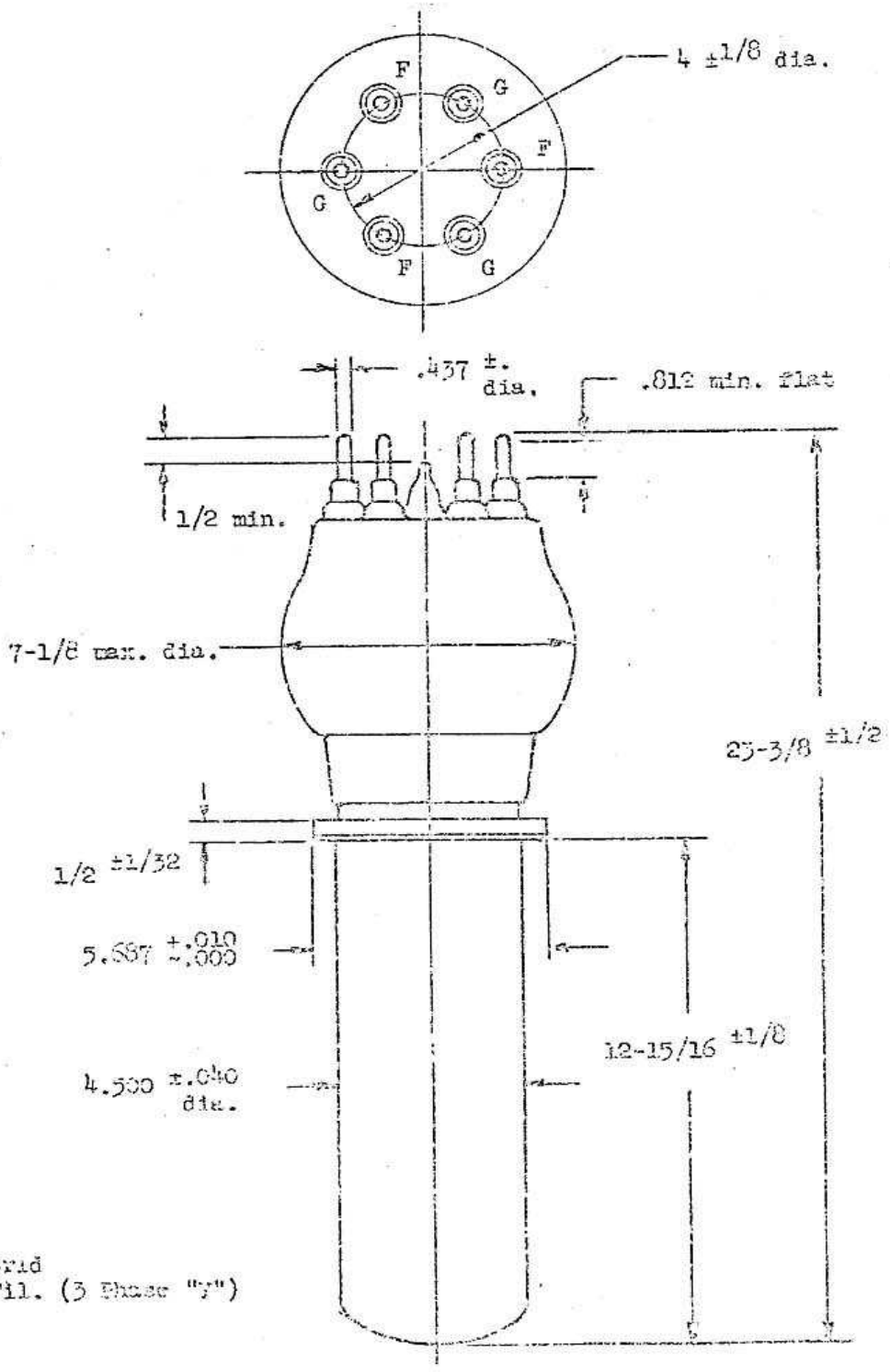
Typical Operation

D-C Plate Voltage	14,500	Volts
D-C Grid Voltage	-2,250	Volts
Peak R-F Grid Voltage	3,200	Volts
D-C Plate Current	8.25	Amperes
D-C Grid Current (Approximate)	1.5	Amperes
Driving Power (Approximate)	5.0	Kilowatts
Power Output (Approximate)	95	Kilowatts

RATINGS VERSUS FREQUENCY

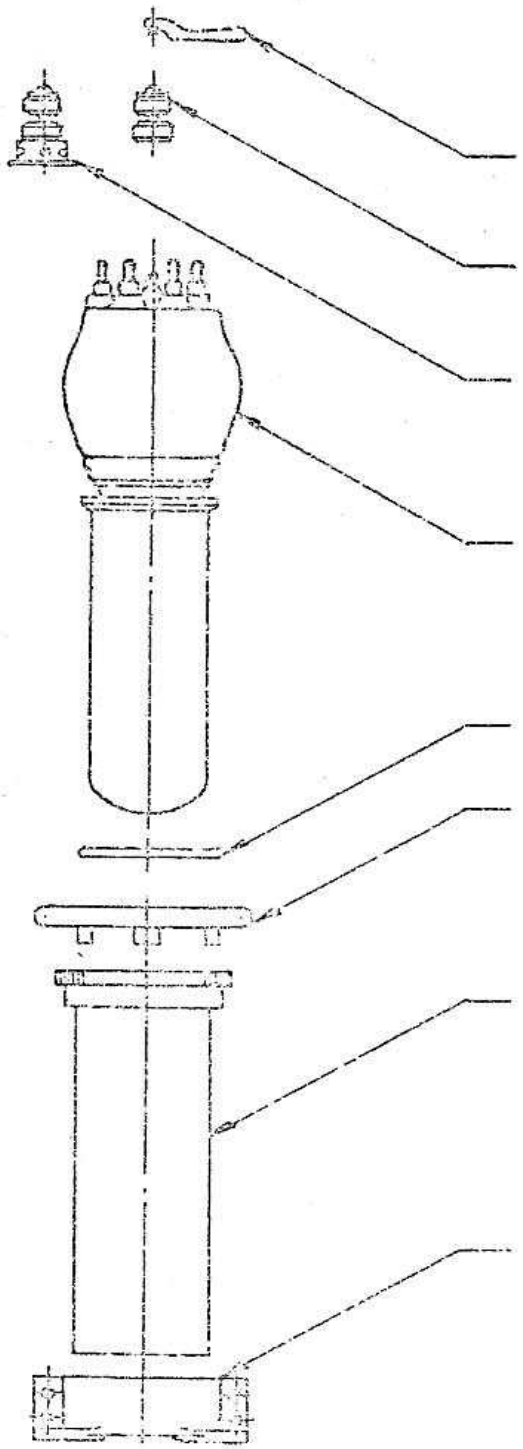
Maximum ratings apply up to 22 megacycles. The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced according to the tabulation below (other maximum ratings are the same as shown above). Special attention should be given to adequate ventilation of the bulb at these frequencies.

Frequency	22	30	40	Megacycles
Percentage of Maximum Rated Plate Voltage & Plate Input	100	80	50	Percent



TERMINALS

Black - Grid
Yellow - Fil. (3 Phase "Y")



Accessories

Spanner Wrench
RT-52843-1 - 2 req'd.
(not to scale)

Terminal Connector
Assem. RT-52578-1
6 req'd. or

Corona & Term. Conn.
Assem. - RT-53974-1
6 req'd. (not to scale)

Tube Types -
F-5918
F-6379
F-6803

'C' Ring
RT-53836-1

Corona Ring Assem.
RT-54002-1

Water Jacket Helix
RT-54319 - Type "A"
or
Water Jacket
RT-53402-12 - Type "A"

Mounting Clamp
RT-53492-1

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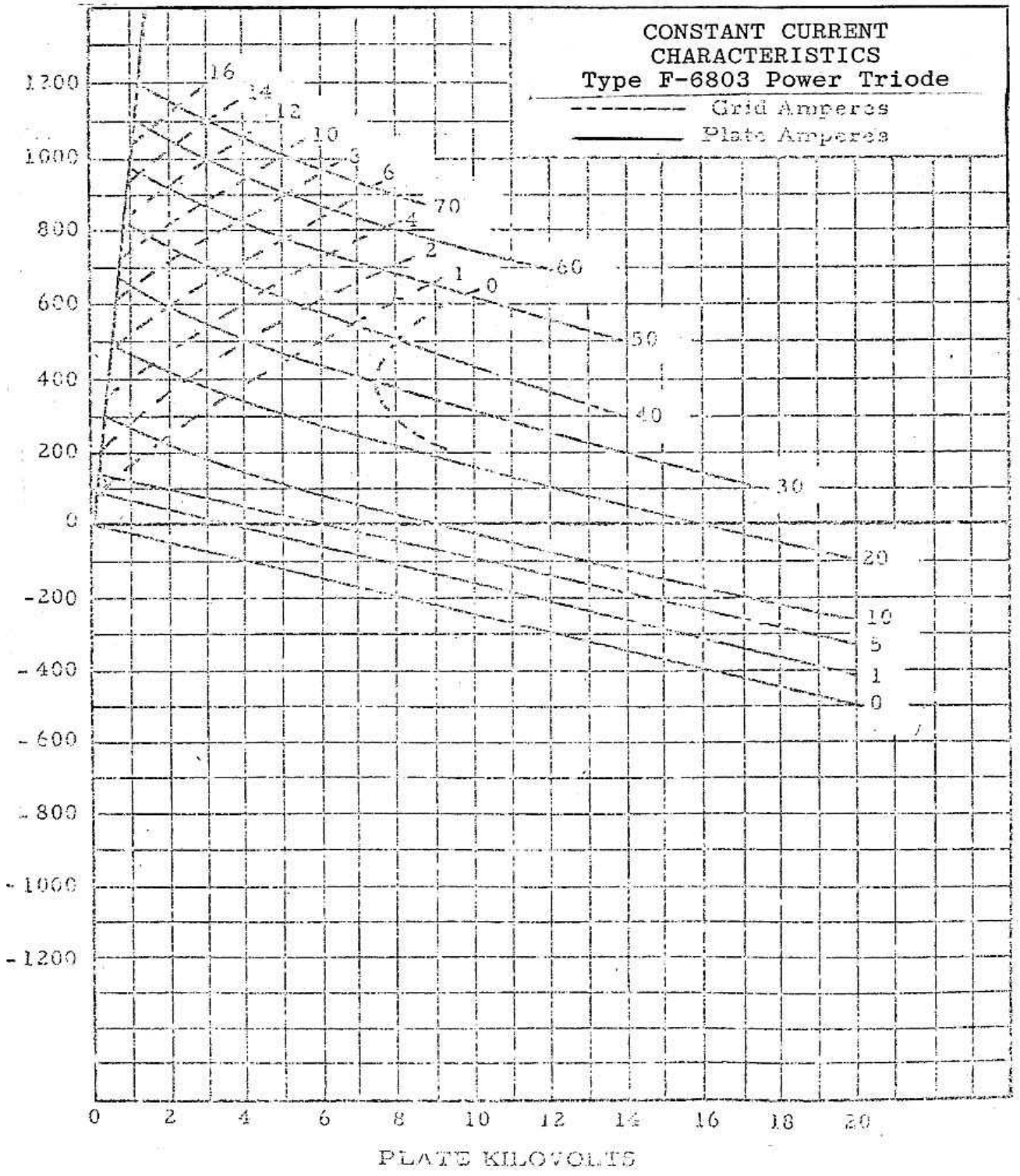

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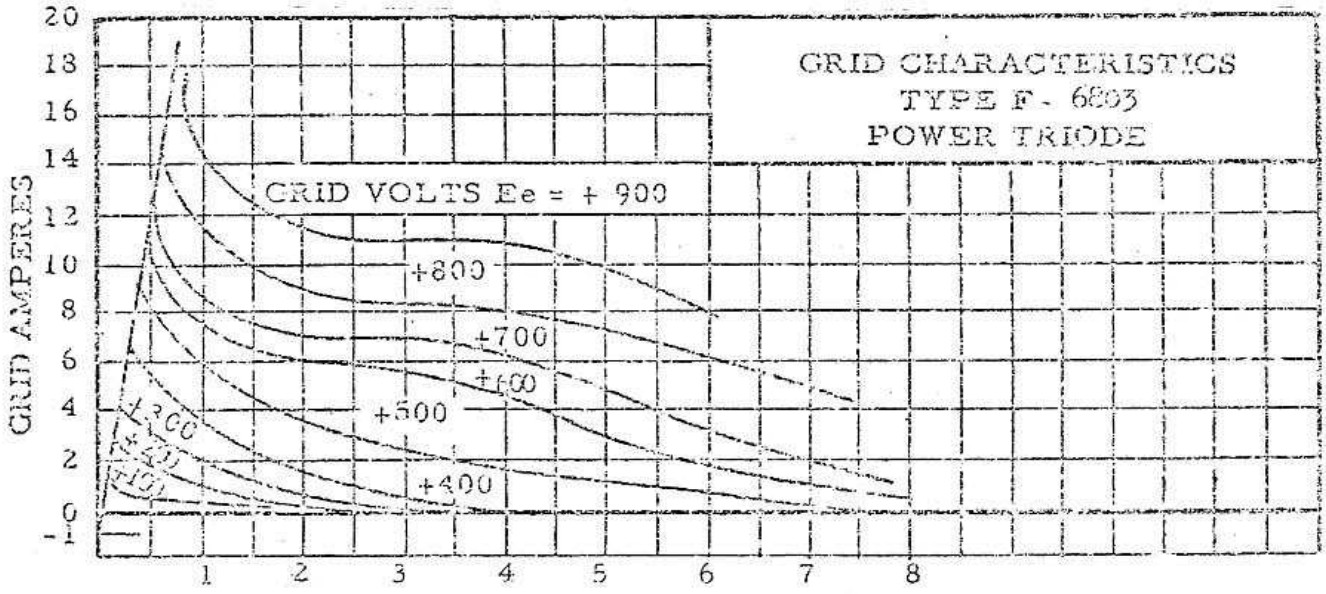
GRID CHARACTERISTICS
TYPE F - 6803
POWER TRIODE
GRID VOLTS Ee = + 900
+800
+700
+600
+500
+400
GRID AMPERES

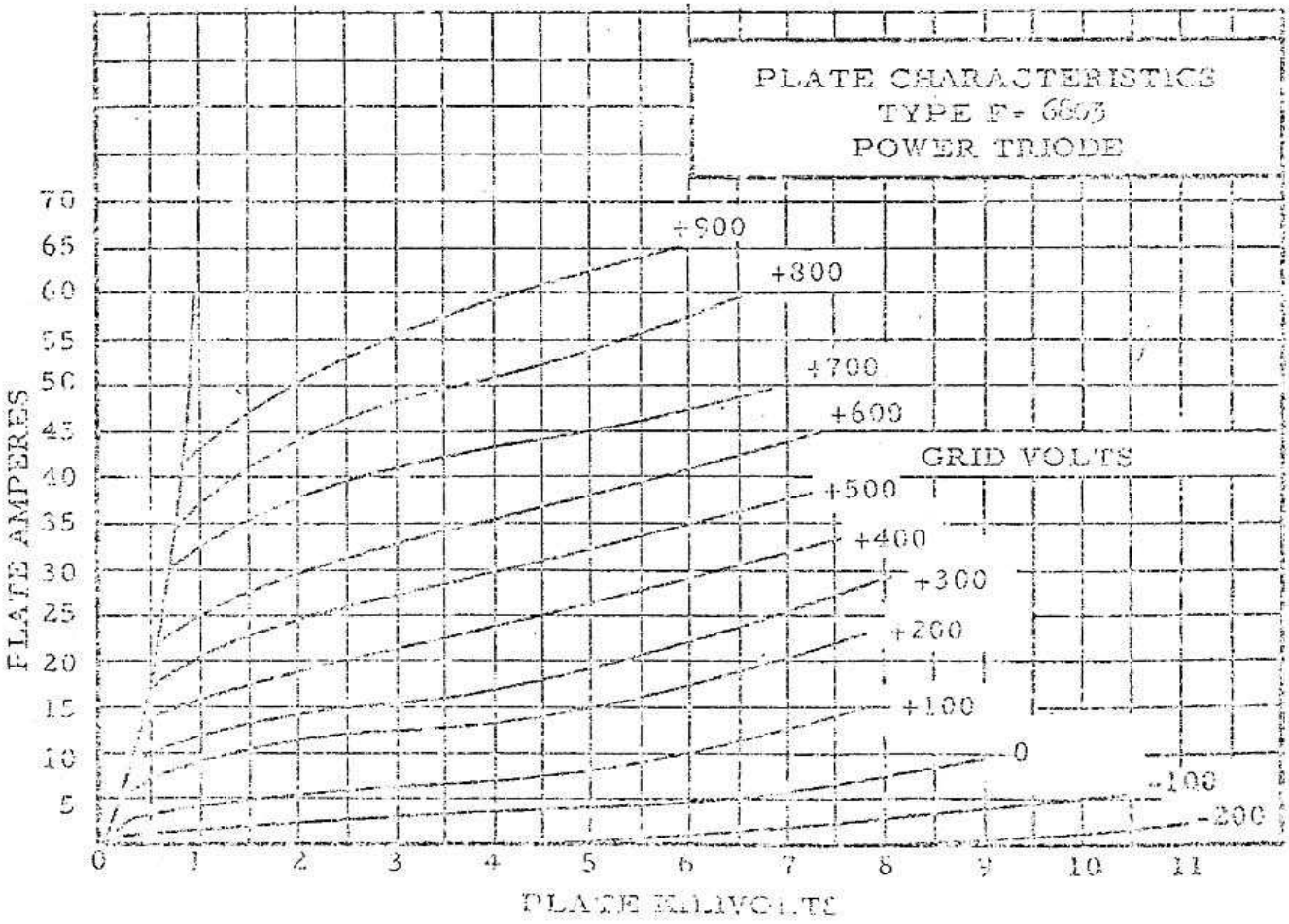
PLATE CHARACTERISTICS
TYPE F- 6803
POWER TRIODE
+900
+800
+700
+600
GRID VOLTS
+500
+400
+300
+200
+100
0
-100
-200
FLATE AMPERES
PLATE KILOVOLTS