engineering TUBE DATA

F-6803
POWER TRIODE

ITT Components Division

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 70 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.

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	40
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
Water Flow on Anode	30 gpm
Maximum Outgoing Water Temperature	70 °C
Air Flow on Bulb, Note 2	250 cfm
Glass Temperature (at hottest part)	180 °C, max.

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

Note 2: 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.

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MECHANICAL (continued)

Net Weight, approximate	25 lbs
Accessories	
Water Jacket	RT-53402
Mounting Clamp	RT-53492
"O" Ring	RT-53836
Terminal Connector (6 required)	RT-52578
Connector Wrench (2 required)	RT-52843

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 3	9 amperes
Max. Signal Plate Input, Note 3	150 kilowatts
Plate Dissipation, Note 3	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, approx.	1,500 watts
Max. Signal Power Output, approx.	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 4	17,500 volts
D-C Plate Current	7 amperes
Plate Input	100 kilowatts
Plate Dissipation	70 kilowatts

Note 3: Averaged over any audio frequency cycle of sine-wave form.

Note 4: 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	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, approx. Note 5	770 watts
Power Output, approx.	25 kilowatts

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, approx.	2 kilowatts
Power Output, approx.	104 kilowatts

Radio-Frequency Power Amplifier and Oscillator--Class C Telegraphy
(Key down conditions per tube without amplitude modulation) Note 6

Maximum Ratings, Absolute Values

D-C Plate Voltage, Note 7	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: At crest of audio-frequency cycle with modulation factor of 1.0

Note 6: Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of carrier conditions.

Note 7: The tube may be operated up to 19,000 d-c plate volts at frequencies of 2 mc or less.

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Typical Operation

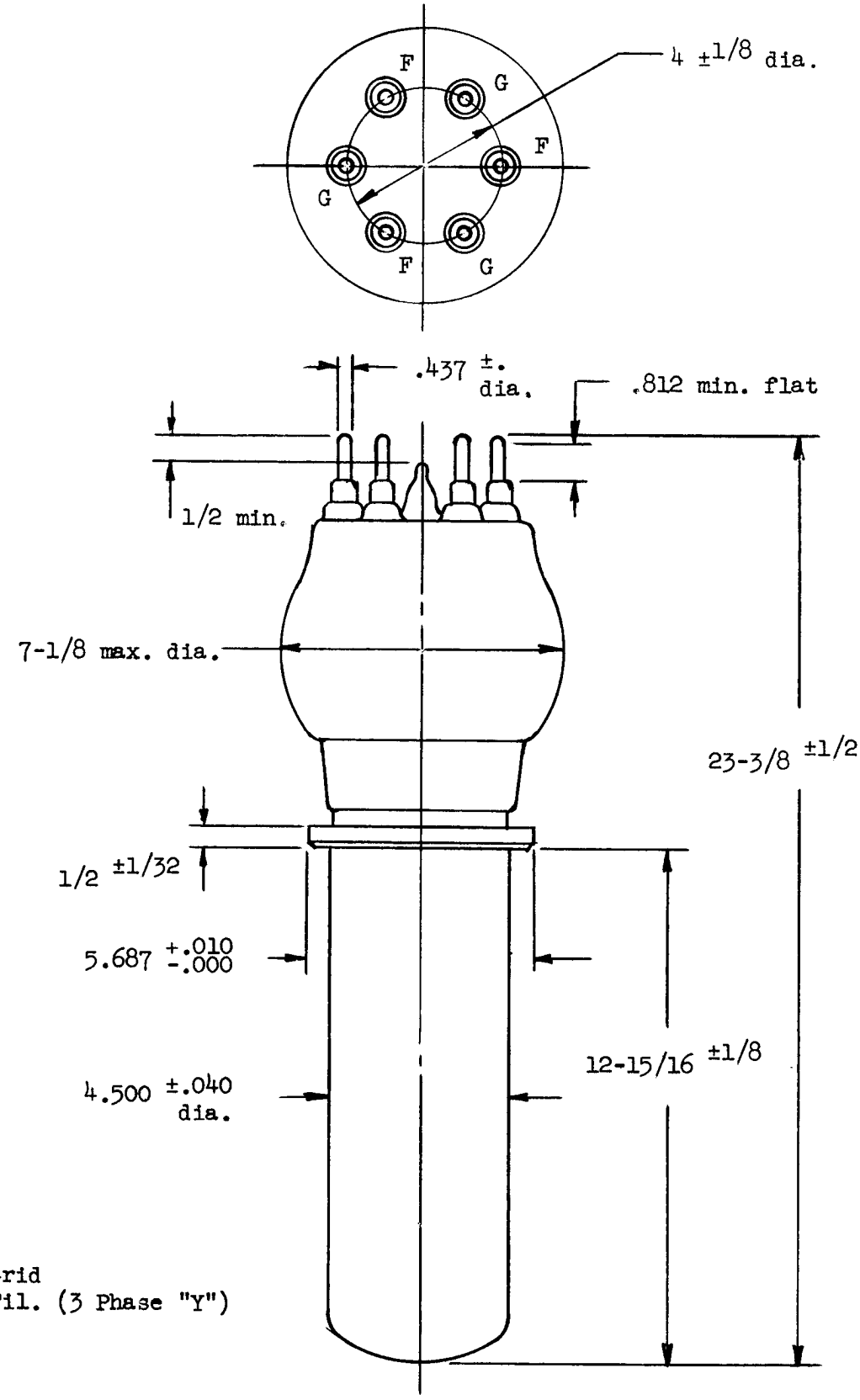
D-C Plate Voltage	14,500 volts
D-C Grid Voltage	2,250 volts
Peak R-F Grid Voltage	3,200 volts
D-C Plate Current	8.25 amperes
D-C Grid Current, approx.	1.5 amperes
Driving Power, approx.	5.0 kilowatts
Power Output, approx.	95 kilowatts

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 per cent

For tube characteristic curves, refer to F-5918-A catalog sheet.



TERMINALS

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

OUTLINE
F-6803 POWER TRIODE

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