



Electron Tube Division

BOX 104

CLIFTON, NEW JERSEY

INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

F-7832
POWER
TRIODE

DESCRIPTION:

The F-7832 is a general purpose metal and ceramic triode for use as a Class C amplifier or oscillator under CW or pulsed conditions. It is also capable of delivering 2 megawatts of power in a hard tube modulator. The anode is capable of dissipating 30 kilowatts during Continuous Commercial Service. Cooling is accomplished by evaporation of water on the anode and forced air on the ceramic and coaxial seals. The cathode is of mesh construction and may be operated on d-c or single phase a-c.

ELECTRICAL:

Filament Voltage	7.5 volts
Filament Current	210 amperes
Filament Starting Current	
Full rated filament voltage may be safely applied to the cold filament	
Filament Heating Time, minimum	15 seconds
Amplification Factor	
$E_c = 150$ v. $I_b = 4.0$ amps	18
Direct Inter-electrode Capacitances	
Grid Plate	40 $\mu\mu\text{f}$
Grid Filament	40 $\mu\mu\text{f}$
Plate Filament	3.0 $\mu\mu\text{f}$

MECHANICAL:

Mounting Position	Vertical
Type of Cooling	Water and Forced Air
Evaporative Cooling (note 1)	
Plate Dissipation (note 2)	30 kw
Evaporation Rate	
at water supply of 20°C, approx.	.2 gpm
at water supply of 90°C, approx.	.22 gpm
Volume of Vapor	
at water supply of 20°C, approx.	45 ft. ³ /min.
at water supply of 90°C, approx.	50 ft. ³ /min.
Air Flow Required - Sufficient air must be provided to keep the ceramic stem surfaces below 200°C.	
Net Weight, approx.	20 lbs.

Note 1: Further details on evaporative cooling available on request.

Note 2: If the boiler is equipped with internal water cooled coils, 30 kw CW may be dissipated under conditions of water flow of 1-1/2 gpm approximately.

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS:

Radio-Frequency Power Amplifier and Oscillator - Class C Telegraphy * (Key down conditions per tube without Amplitude Modulation) **

Maximum CCS Ratings, Absolute Values

D-C Plate Voltage	10,000	volts max.
D-C Grid Voltage	-1,500	volts max.
D-C Plate Current	8	amperes max.
D-C Grid Current ***	.6	amperes max.
Plate Input	60	kilowatts max.
Plate Dissipation	30	kilowatts max.

Typical Operation

D-C Plate Voltage	9,500	7,500	6,000	volts
D-C Grid Voltage	-1,300	-1,200	-1,000	volts
Peak R-F Grid Voltage	1,850	1,700	1,500	volts
D-C Plate Current	5.5	5.2	5.5	amperes
D-C Grid Current, approx.	.530	.53	.53	amperes
Driving Power, approx.	1,000	900	800	watts
Grid Dissipation, approx.	300	275	275	watts
Power Output, approx.	35	28	22	kilowatts

* The filament voltage may be reduced to an absolute minimum at 6.8 volts under conditions of 3.5 amperes maximum plate current.

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

*** The power dissipated by the grid must never exceed 600 watts. Grid dissipation approximates the product of peak positive grid voltage and d-c grid current. Peak positive grid voltage may be measured by means of a suitable peak voltmeter connected between grid and filament, or determined by calculations using the constant current characteristics of the tube.

RATINGS VERSUS FREQUENCY:

Maximum ratings apply up to 50 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 ceramics and seals at these frequencies.

Frequency	50	70	110	megacycles
Percentage of Maximum Rated Plate Voltage and Plate Input	100	80	50	per cent

PULSE SERVICE OPERATIONS:

In pulse R-F amplifier service, it is possible to operate the tube under conditions not permissible in CW operation. Because of the wide variety of operating conditions, it is advisable that tube operation recommendations be obtained from our Engineering Department for specific conditions.

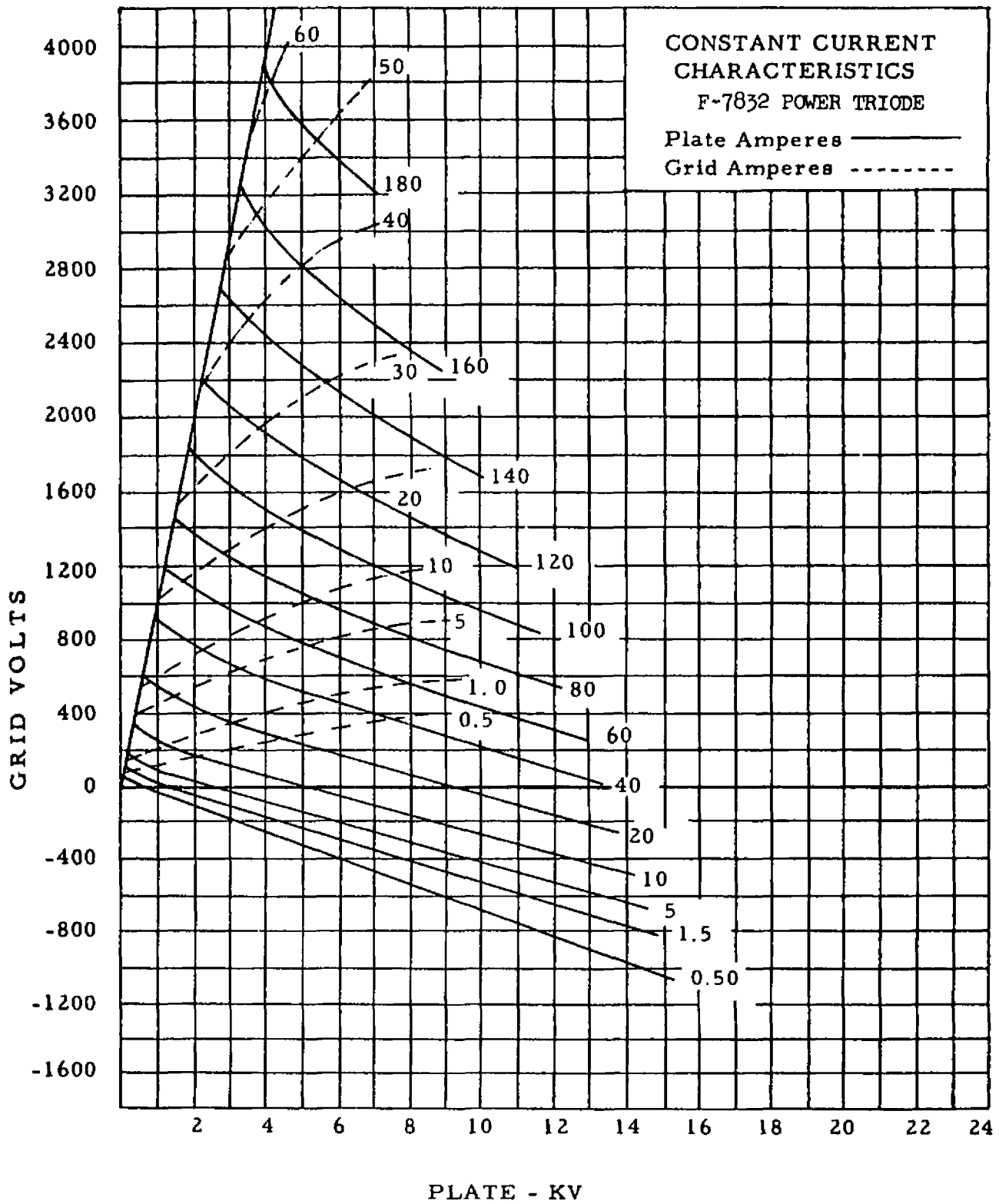
MODULATOR TUBE - PULSED OPERATION:

Maximum Ratings, Absolute Values

D-C Plate Voltage	18	kilovolts
Peak Plate Voltage (instantaneous)	20	kilovolts
D-C Grid Voltage	-2500	volts
Peak Positive Grid Voltage	4000	volts
Pulse Cathode Current	220	amperes
Grid Dissipation	600	watts
Pulse Length	2000	μ seconds

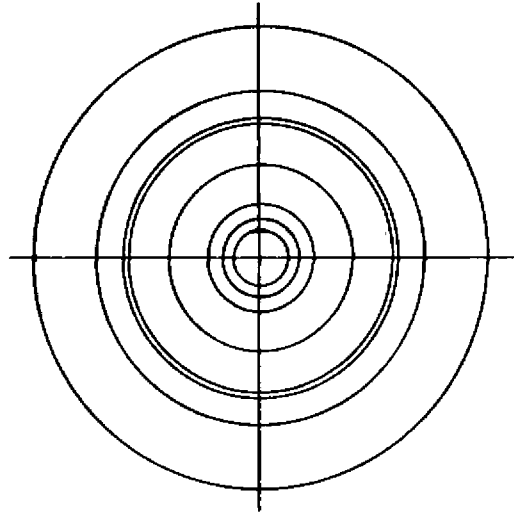
Typical Operation

D-C Plate Voltage	16	kilovolts
Pulse Plate Current	120	amperes
D-C Grid Voltage	-1500	volts
Pulse Grid Current	40	amperes
Pulse Positive Grid Voltage	2200	volts
Duty Factor	.003	
Pulse Length	10	μ seconds
Plate Output Voltage	13.5	kilovolts
Pulse Output Power	1.6	mw



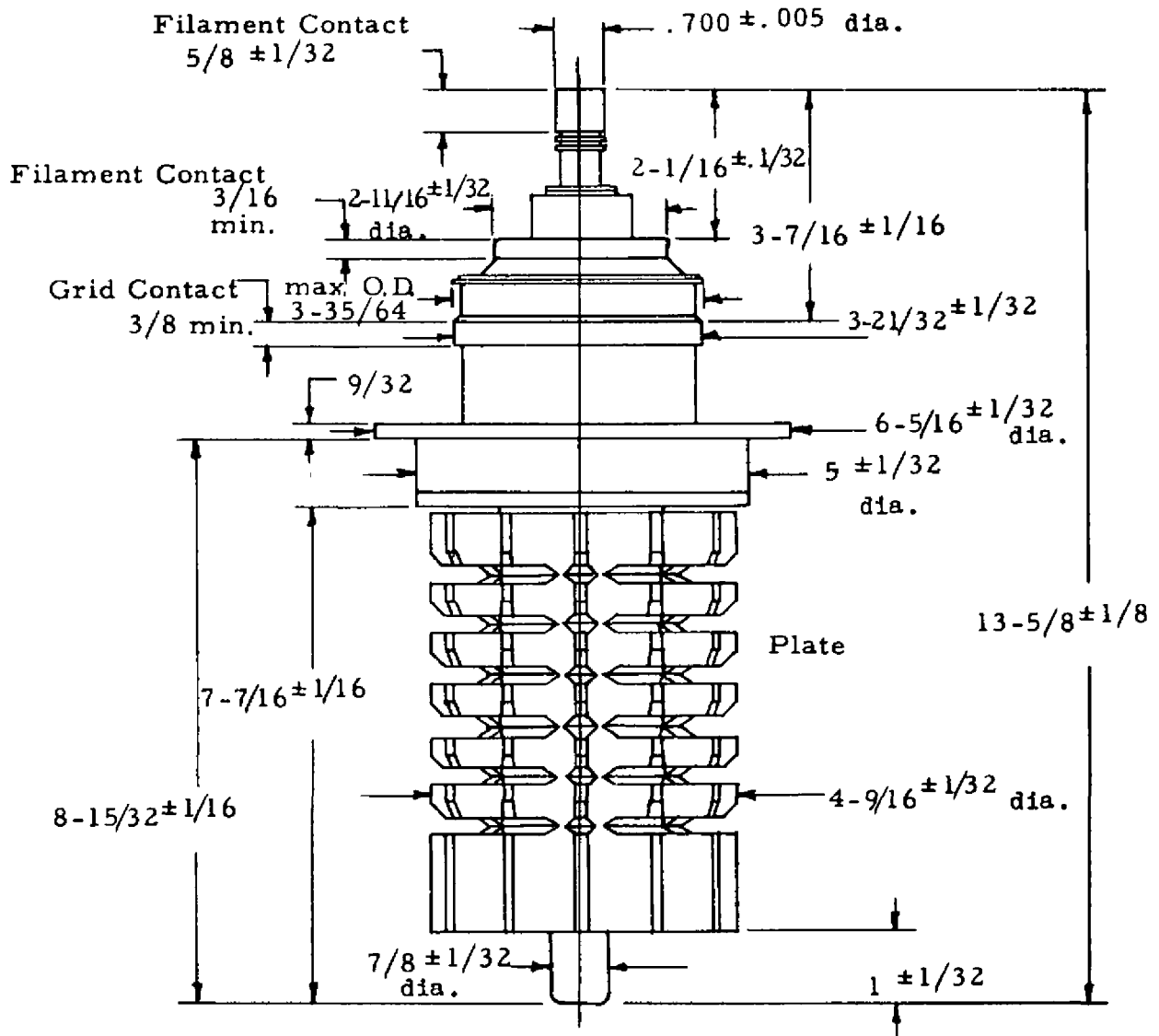
F-7832
POWER
TRIODE

All dimensions
in inches



ACCESSORIES

Grid Ring Conn. Assy.
RT-55052
Conn. Fila. Large
RT-54764
Conn. Fila. Small
RT-54765
Cooling Boiler
RT-55166
or
Boiler Condenser Assy.
RT-55384



Note: Contact areas are to
be concentric within .025"

OUTLINE