



# Electron Tube Division

BOX 104 CLIFTON, NEW JERSEY  
INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

F-8386  
F-8387  
F-8388  
POWER  
TRIODES

## DESCRIPTION

The F-8386, F-8387 and F-8388 tubes are general purpose metal and ceramic triodes for use as amplifiers, oscillators or Class B modulators under CW or pulsed conditions. The cathode is a thoriated tungsten filament. The F-8386 has a heavy wall anode capable of dissipating 100 Kw with circulating water. The F-8387 has a forced-air cooled copper anode-radiator assembly of brazed construction capable of dissipating 45 Kw. The F-8388 has a grooved, heavy walled anode capable of dissipating 100 Kw when evaporation cooled by water. Maximum CW ratings apply up to 30 mc.

## ELECTRICAL

Filament Voltage	14.5	volts
Filament Current	330	amperes
Filament Starting Current	1,000	amperes
Filament Heating Time, minimum	15	seconds
Filament Cold Resistance	.006	ohms
Amplification Factor	20	
Inter-electrode Capacitance		
Grid-Plate	85	μμf
Grid-Filament	120	μμf
Plate-Filament	6.0	μμf

## MECHANICAL

Mounting Position	Vertical, Anode down		
	<u>F-8386</u>	<u>F-8387</u>	<u>F-8388</u>
Plate Dissipation	100	45	100 kilowatts
Water Flow	30	-	- gpm
Air Flow	-	1,700	- cfm
Static Air Pressure	-	6.5	- inches of water
Max. Outgoing Water Temperature	70	-	- °C
Max. Water Pressure	80	-	- psi
Max. Incoming Air Temperature	-	45	- °C
Max. Ceramic & Seal Temperature	250	250	250 °C
Evaporation Rate	-	-	.75 gpm
Net Weight, approx.	36	75	71 lbs.

F-8386  
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MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

Audio-Frequency Power Amplifier and Modulator - Class B

Maximum Ratings, Absolute Values

D-C Plate Voltage	17,000	volts
Max. Signal D-C Plate Current *	16	amperes
Max. Signal Plate Input *	250	kw

Plate Dissipation \*

Refer to Plate Dissipation ratings on page 1

Typical Operation

(Unless otherwise specified, values are for two tubes)

D-C Plate Voltage	12,000	volts
D-C Grid Voltage	-480	volts
Peak A-F Grid-to-Grid Voltage	1,660	volts
Zero Signal D-C Plate Current	2	amperes
Max. Signal D-C Plate Current	22.3	amperes
Effective Load Resistance, Plate-to-Plate	1,075	ohms
Max. Signal Driving Power, approx.	550	watts
Max. Signal Power Output, approx.	165	kw

\*Averaged over any audio frequency cycle of sine-wave form.

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	13,000	volts
D-C Grid Voltage	-3,000	volts
D-C Plate Current	16	amperes
D-C Grid Current	3.5	amperes
Plate Input	190	kw

Plate Dissipation

67% of rated Plate Dissipation referenced on page 1

Typical Operation

D-C Plate Voltage	12,000	volts
D-C Grid Voltage	-1,400	volts
Peak R-F Grid Voltage	2,100	volts
Peak R-F Plate Voltage	10,000	volts
D-C Plate Current	15	amperes
D-C Grid Current	2.2	amperes
Driving Power, approx.	4.6	kw
Power Output, approx.	136	kw

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

Maximum Ratings, Absolute Values

D-C Plate Voltage	17,000	volts
D-C Grid Voltage	-3,000	volts
D-C Plate Current	19	amperes
D-C Grid Current	3.5	amperes
Plate Input	250	kw
Plate Dissipation		

Refer to Plate Dissipation ratings on page 1

Typical Operation

	<u>Cathode Drive</u>	<u>Grid Drive</u>		
D-C Plate Voltage	11,000	12,000	15,500	volts
D-C Grid Voltage	-1,300	-1,500	-1,800	volts
Peak R-F Grid Voltage	2,000	2,200	2,500	volts
Peak R-F Plate Voltage	9,500	9,300	12,500	volts
D-C Plate Current	14.4	15.5	17.0	amperes
D-C Grid Current	2.6	1.7	1.5	amperes
R-F Load Resistance	437	325	415	ohms
Driving Power, approx.	32,000	3,800	3,800	watts
Power Output, approx.	150	135	135	kw

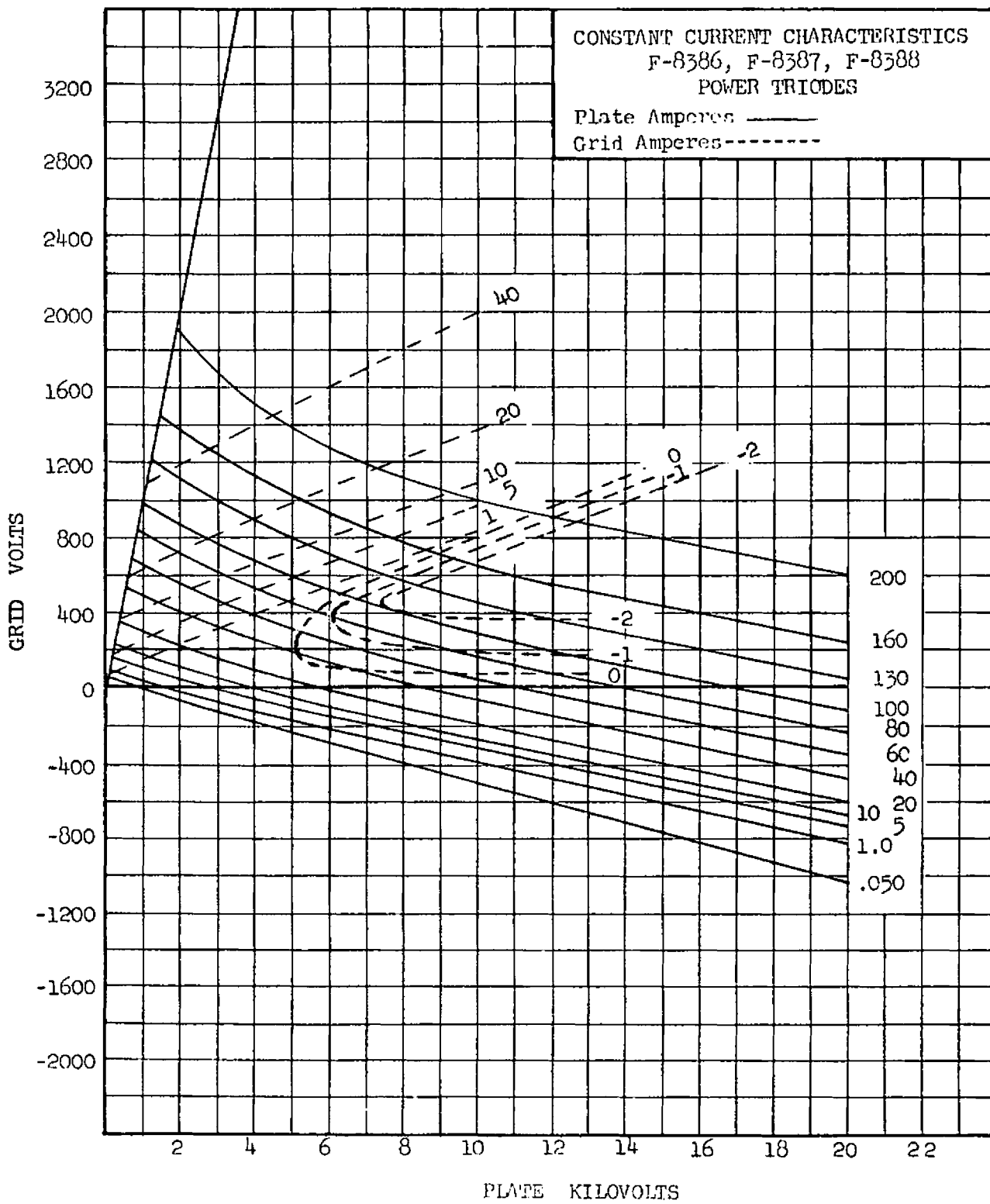
\*Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of the carrier conditions.

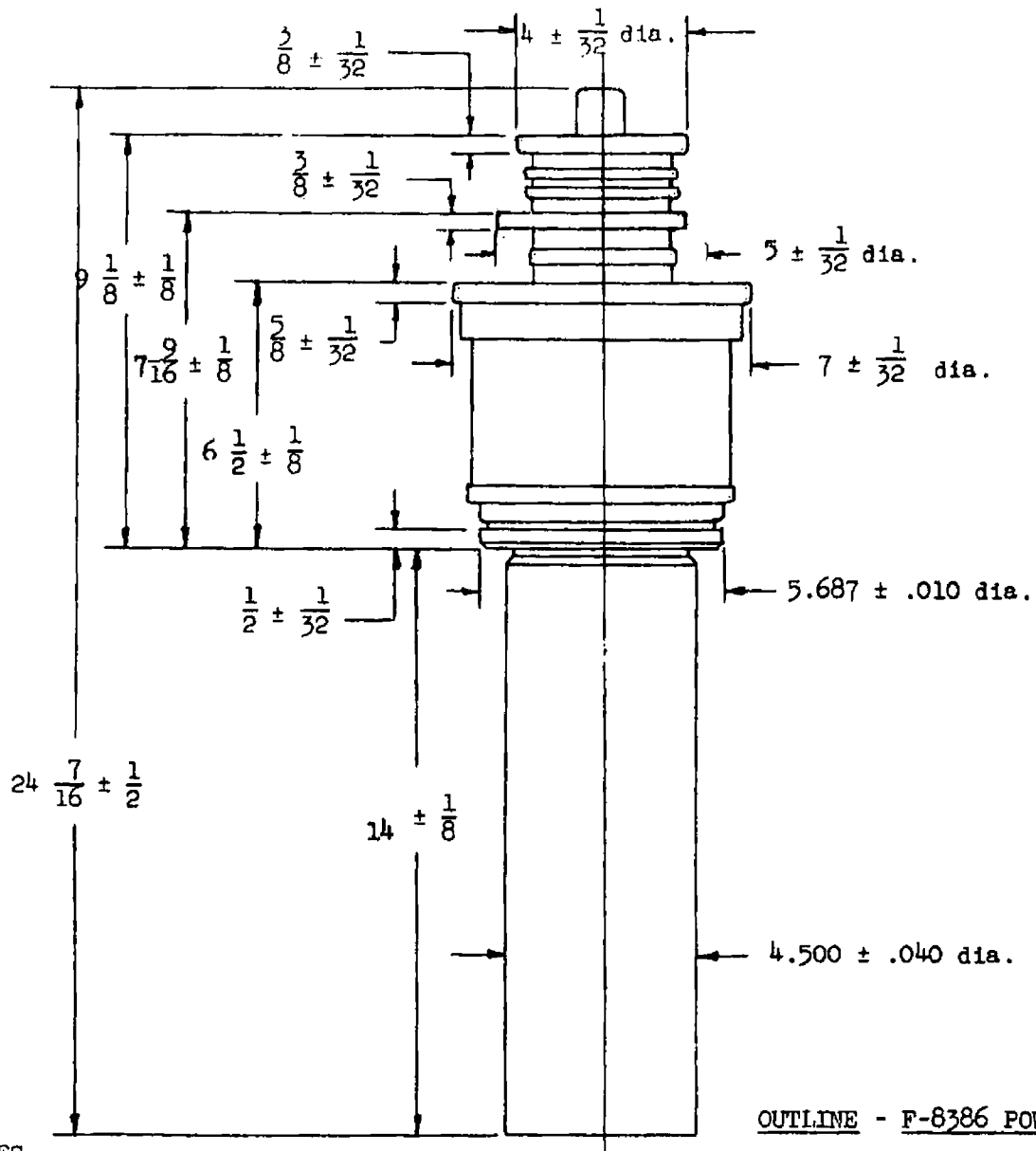
PULSE SERVICE OPERATIONS

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.

Additional information for specific applications can be obtained from the:

ITT Electron Tube Division  
Applications Section  
P.O. Box 104  
Clifton, New Jersey

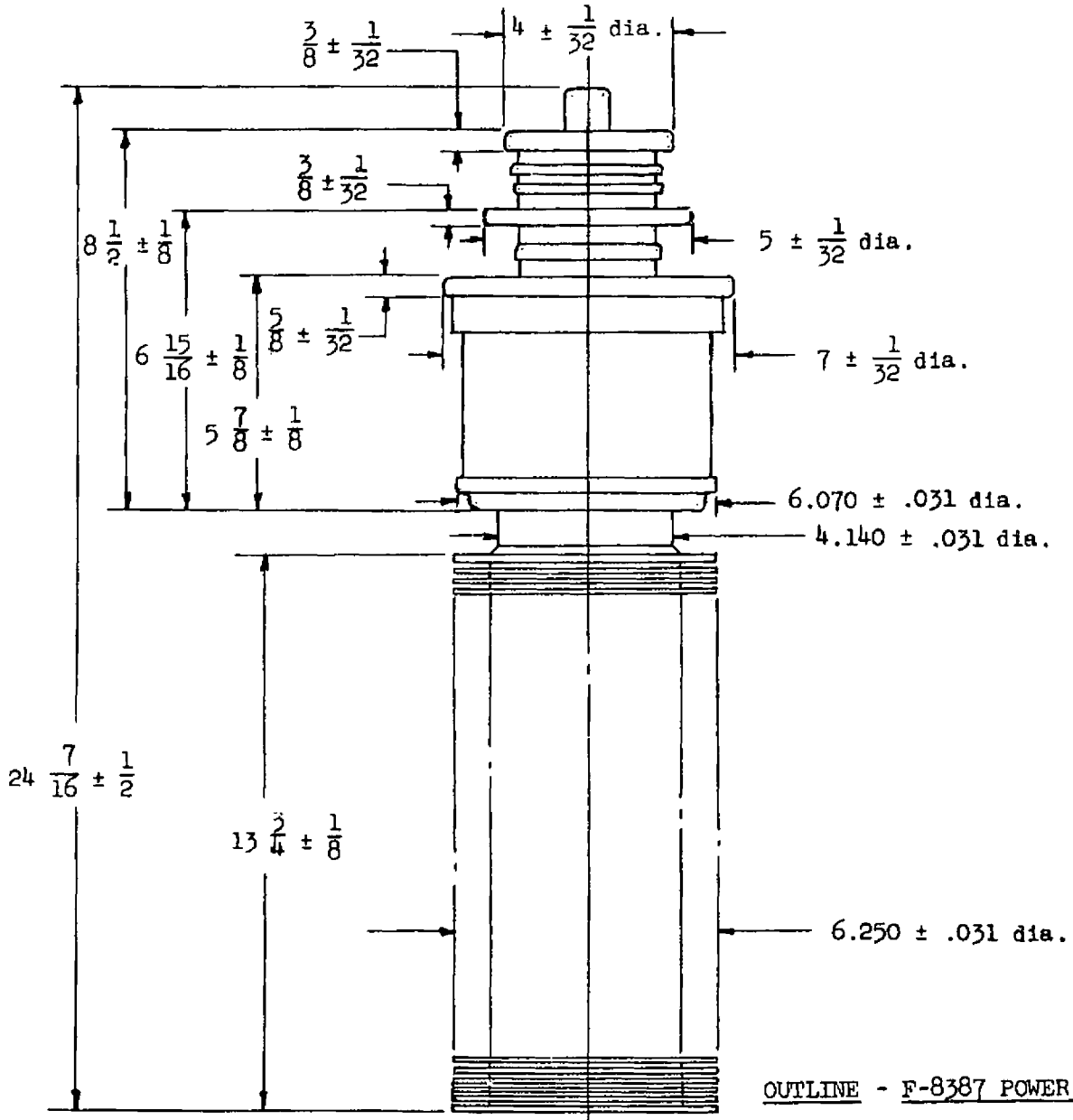




OUTLINE - F-8386 POWER TRIODE

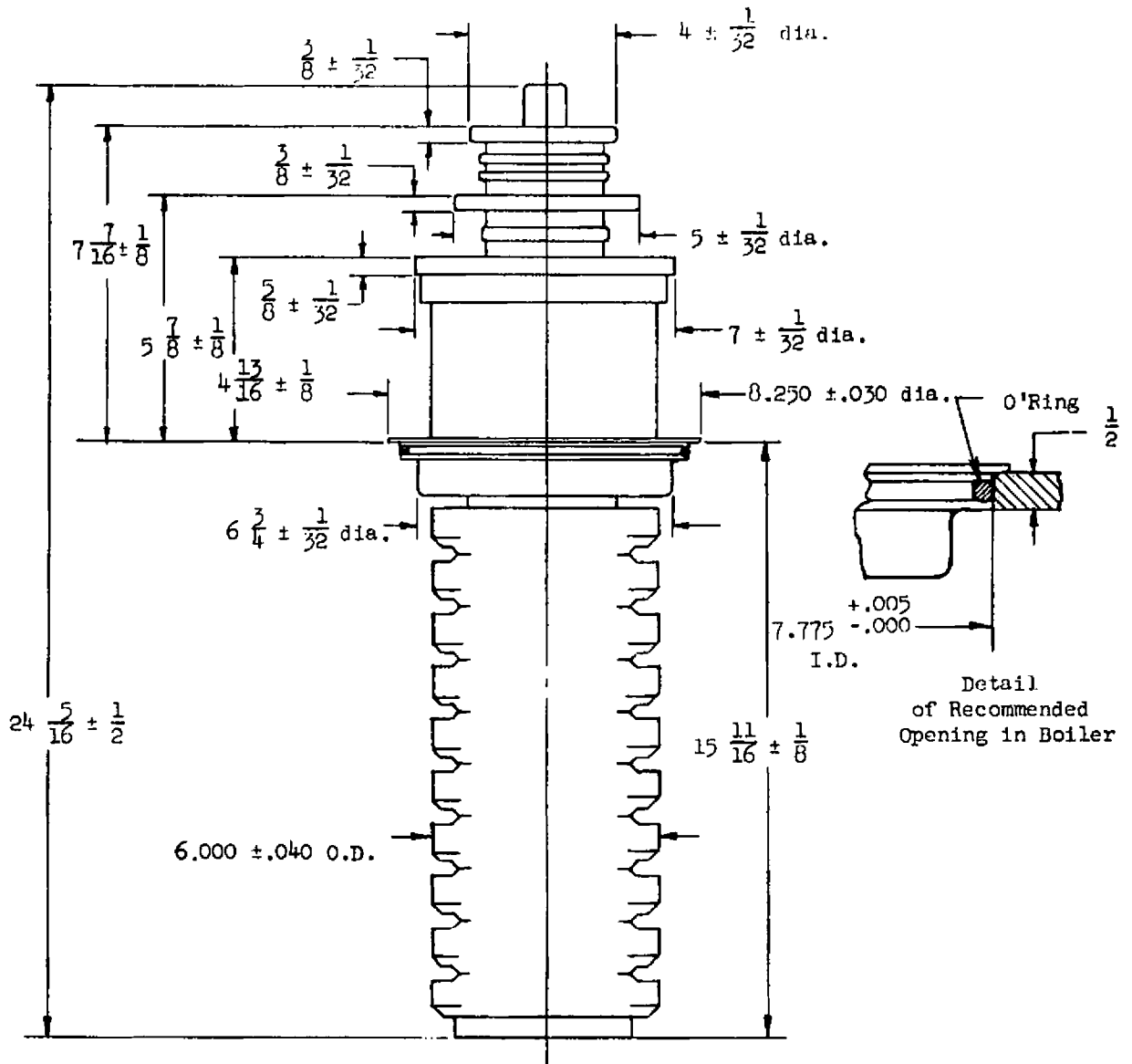
ACCESSORIES

- |                      |            |          |
|----------------------|------------|----------|
| Water Jacket         | - RT-54319 | "Type D" |
| Grid Conn. Assy.     | - RT-55464 |          |
| Conn. Fil. #1 Assy.  | - RT-55476 |          |
| Conn. Fil. #2 Assy.  | - RT-55469 |          |
| Corona Ring Assy.    | - RT-54002 |          |
| Ball Gap-Anode Assy. | - RT-55472 |          |



ACCESSORIES

- |                      |            |
|----------------------|------------|
| Air Distributor      | - RT-55397 |
| Tube Support         | - RT-55398 |
| Grid Conn. Assy.     | - RT-55464 |
| Conn. Fil. #1 Assy.  | - RT-55476 |
| Conn. Fil. #2 Assy.  | - RT-55469 |
| Corona Ring Assy.    | - RT-55532 |
| Ball Gap-Anode Assy. | - RT-55472 |



ACCESSORIES:

- |                      |   |                                   |
|----------------------|---|-----------------------------------|
| Grid Conn. Assy.     | - | RT-55464                          |
| Conn. Fil. 1 Assy.   | - | RT-55476                          |
| Conn. Fil. 2 Assy.   | - | RT-55469                          |
| Corona Ring Assy.    | - | RT-54002                          |
| Ball Cap-Anode Assy. | - | RT-55472                          |
| O'Ring K-K           | - | RT-53836                          |
| Cooling Boiler       | - | RT-55314, RT-55355<br>or RT-55574 |

OUTLINE - F-8388 Power Triode