

FEDERAL POWER TRIODE Type F-3X2500F3 2.5 Kilowatts Plate Dissipation



GENERAL DATA

DESCRIPTION:

FEDERAL'S Type F-3X2500F3 is a three-electrode tube designed for use in industrial and communications applications as an R-F amplifier, oscillator or modulator service. The anode, forced-air-cooled, is capable of dissipating 2.5 kilowatts. The cathode is a thoriated tungsten filament. Maximum ratings apply up to 30 megacycles.

Electrical:

- ▶ Filament Voltage 7.5 Volts
- ▶ Filament Current 51 Amperes
- ▶ Filament Starting Current 100 Amps. max.
- ▶ Amplification Factor (average) 20
- ▶ Transconductance

$$I_b = .830 \text{ amps.}$$

$$E_b = 3000 \text{ Volts} \quad 20,000 \mu\text{mhos}$$

▶ Interelectrode Capacitances

Grid-Plate	20 μmf
Grid-Filament	36 μmf
Plate-Filament	1.2 μmf

Mechanical:

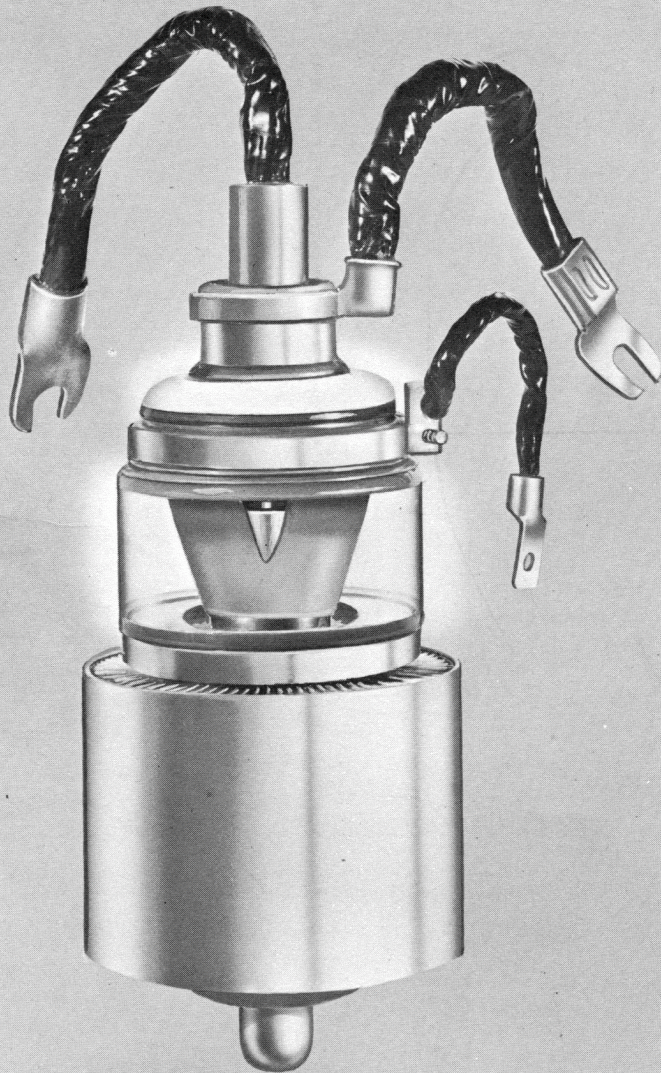
- ▶ Mounting Position—
Vertical, Anode Up or Down
- ▶ Type of Cooling—Forced Air
Maximum Incoming
Air Temperature 45° C
- ▶ Required Air Flow on Anode ⁽¹⁾
Plate Dissipation
(Kilowatts) 2.5
Air Flow—Minimum Cubic
Feet Per Min. 120
Pressure—Inches of
Water 1.0
- ▶ Required Air Flow on Stem ⁽²⁾
—Cubic Feet Per Min. 6
- ▶ Maximum Glass
Temperature 150° C
- ▶ Net Weight
Approximate 7.5 Lbs.

NOTE 1: Cooling air to radiator and filament seals should be applied before filament power and should be continued for five minutes after removal of filament power.

NOTE 2: Minimum flow to be directed toward filament stem structure, between the inner and outer filament conductors.

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Type F-3X2500F3 has Grid and Filament connectors attached, for the convenience of the equipment designer.

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RADIO FREQUENCY POWER AMPLIFIER OR OSCILLATOR

(Frequencies below 30 Mc.)
Class-C FM or Telegraphy
(Key-down conditions, per tube)

MAXIMUM RATINGS	
D-C PLATE VOLTAGE - - - -	6000 MAX. VOLTS
D-C PLATE CURRENT - - - -	2.5 MAX. AMPS
PLATE DISSIPATION - - - -	2500 MAX. WATTS
ANODE-COOLER CORE TEMPERATURE	150 MAX. °C
GRID DISSIPATION - - - -	150 MAX. WATTS

TYPICAL OPERATION

(Frequencies below 30 Mc., per tube)

D-C Plate Voltage - - -	4000	5000	6000	Volts
D-C Plate Current - - -	2.5	2.5	2.08	Amps
D-C Grid Voltage - - -	-300	-450	-500	Volts
D-C Grid Current - - -	245	265	180	Ma.
Peak R. F. Grid Input Voltage-	580	750	765	Volts
Driving Power (approx.) - - -	142	197	136	Watts
Grid Dissipation - - -	68	78	46	Watts
Plate Power Input - - -	10,000	12,500	12,500	Watts
Plate Dissipation - - -	2500	2500	2500	Watts
Plate Power Output - - -	7500	10,000	10,000	Watts

PLATE MODULATED RADIO FREQUENCY AMPLIFIER

(Frequencies below 30 Mc.)
Class-C Telephony
(Carrier conditions, per tube)

MAXIMUM RATINGS

D-C PLATE VOLTAGE - - - -	5000 MAX. VOLTS
D-C PLATE CURRENT - - - -	2.0 MAX. AMPS
PLATE DISSIPATION - - - -	1670 MAX. WATTS
ANODE-COOLER CORE TEMPERATURE	150 MAX. °C
GRID DISSIPATION - - - -	150 MAX. WATTS

TYPICAL OPERATION

(Frequencies below 30 Mc., per tube)

D-C Plate Voltage - - -	4000	4500	5000	Volts
D-C Plate Current - - -	1.67	1.55	1.45	Amps
Total Bias Voltage - - -	-450	-500	-550	Volts
Fixed Bias Voltage - - -	-230	-325	-410	Volts
Grid Resistor - - -	1500	1500	1400	Ohms
D-C Grid Current - - -	150	120	100	Ma.
Peak R. F. Grid Input Voltage-	680	720	760	Volts
Driving Power (approx.) - - -	102	86	76	Watts
Grid Dissipation - - -	35	26	21	Watts
Plate Power Input - - -	6670	6970	7250	Watts
Plate Dissipation - - -	1670	1670	1670	Watts
Plate Power Output - - -	5000	5300	5580	Watts

Federal's longer tube life means lower costs. Increase the life of the tubes in your equipment, and unit costs per hour go down.

AUDIO FREQUENCY POWER AMPLIFIER AND MODULATOR

Class B (Sinusoidal wave, two tubes unless otherwise specified)

MAXIMUM RATINGS

D-C PLATE VOLTAGE - - - -	6000 MAX. VOLTS
MAX.-SIGNAL D-C PLATE CURRENT, PER TUBE - - - -	2.5 MAX. AMPS
PLATE DISSIPATION, PER TUBE - - -	2500 MAX. WATTS
ANODE-COOLER CORE TEMPERATURE	150 MAX. °C

TYPICAL OPERATION CLASS AB₂ (Two Tubes)

D-C Plate Voltage - - -	4000	5000	6000	Volts
D-C Grid Voltage (approx.)* -	-150	-190	-240	Volts
Zero-Signal D-C Plate Current	0.6	0.5	0.4	Amps
Max.-Signal D-C Plate Current	4.0	3.2	3.0	Amps
Effective Load, Plate to Plate -	2200	3600	4650	Ohms
Peak A-F Grid Input Voltage (per tube) - - -	340	360	390	Volts
Max.-Signal Peak Driving Power - - -	340	230	225	Watts
Max.-Signal Nominal Driving Power (approx.) - - -	170	115	113	Watts
Max.-Signal Plate Power Output - - -	11,000	11,000	13,000	Watts

*Adjust to give stated zero-signal plate current.

TYPICAL OPERATION CLASS AB₂ (Two Tubes)

Modulator service for 4000 and 5000 volt operation, to modulate one or two tubes, as shown under "Plate Modulated Radio Frequency Amplifier"

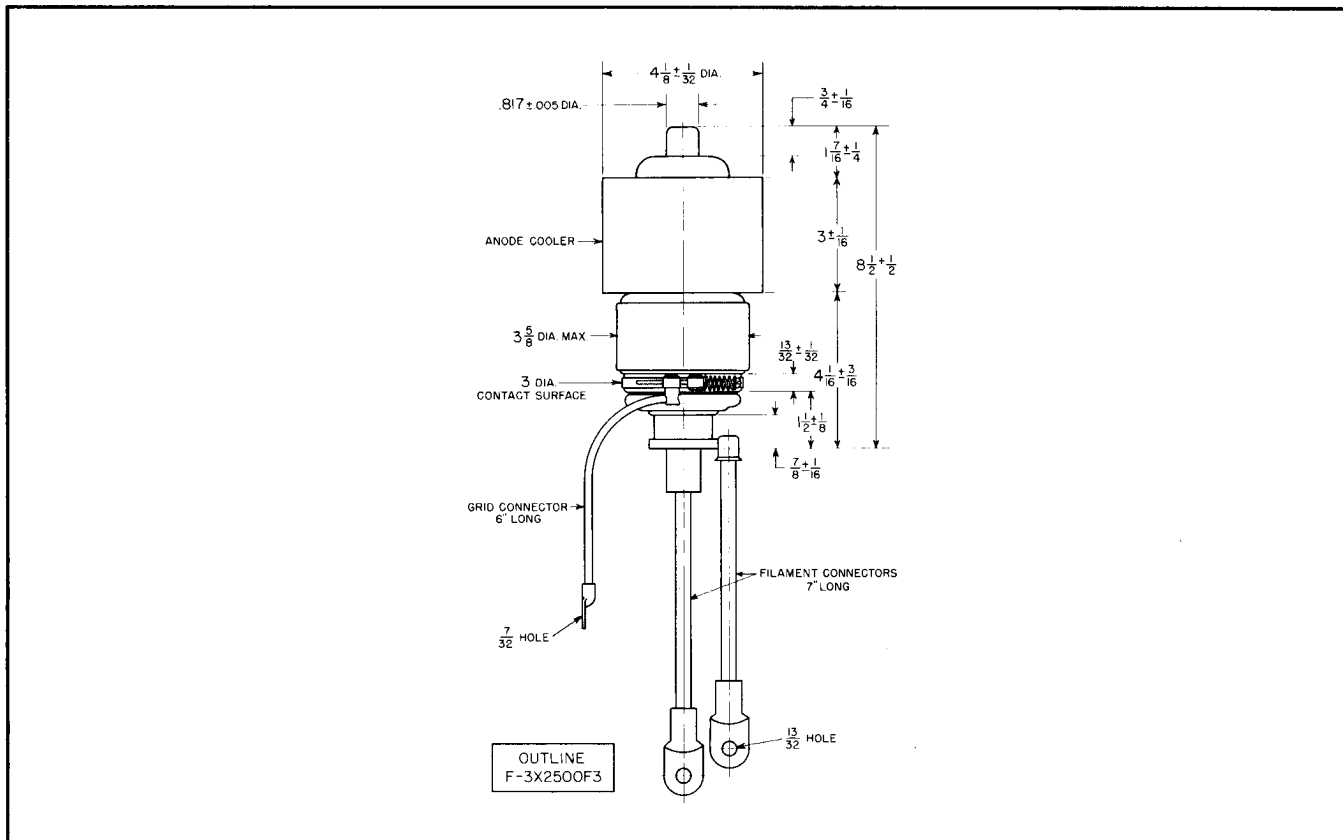
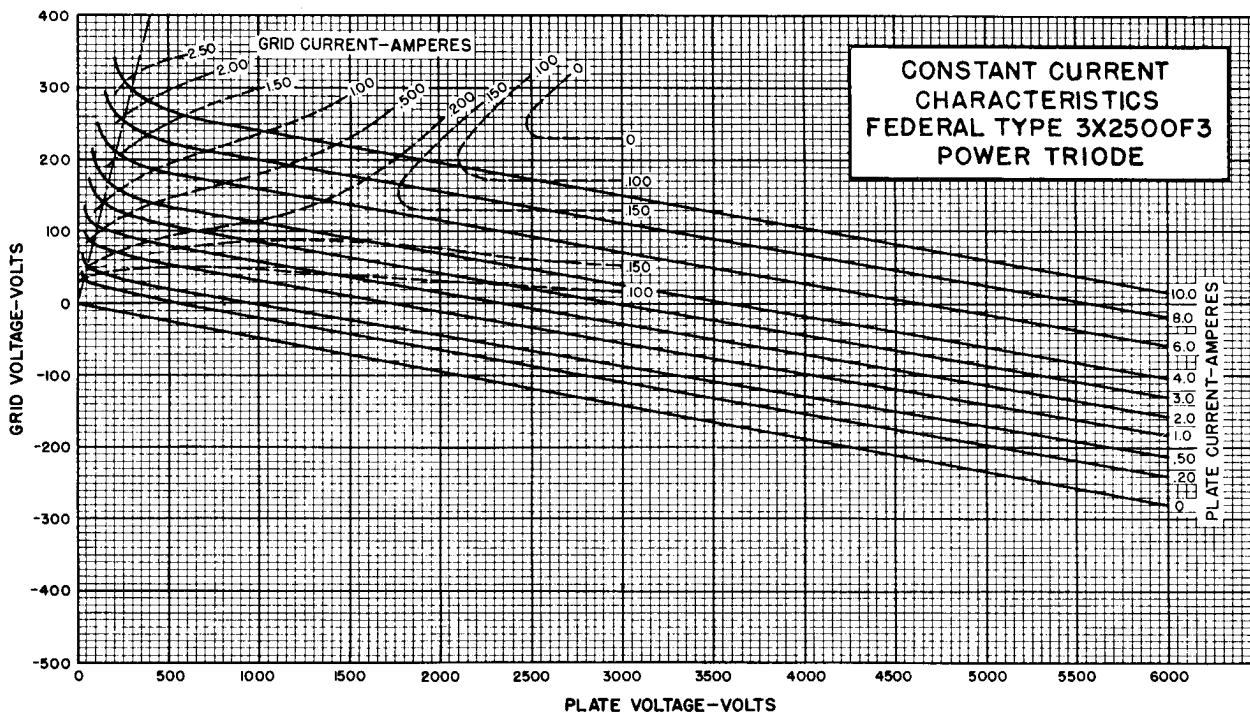
D-C Plate Voltage -	4000	5000	4000	5000	Volts
D-C Grid Voltage (approx.)* - - -	-155	-200	-145	-190	Volts
Zero-Signal D-C Plate Current - - -	0.4	0.4	0.6	0.5	Amps
Max.-Signal D-C Plate Current - - -	1.35	1.13	2.70	2.26	Amps
Effective Load, Plate to Plate - - -	6600	10,000	3300	5000	Ohms
Peak A-F Grid Input Voltage (per tube)	240	275	285	310	Volts
Max.-Signal Peak Driving Power - -	42	40	134	118	Watts
Max.-Signal Nominal Driving Power (ap- prox.) - - - -	21	20	67	59	Watts
Max.-Signal Plate Power Output - -	3700	4000	7400	8000	Watts
Will Modulate one Tube R. F. Final Input of - - -	6670	7250			Watts
Will Modulate two Tubes R. F. Final Input of - - -			13,340	14,500	Watts

*Adjust to give stated zero-signal plate current.



Precision craftsmanship was initiated by Federal in the earliest days of tube manufacture, and has been maintained ever since.

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Federal Telephone and Radio Company

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**Federal Always Has
Made Better Tubes**