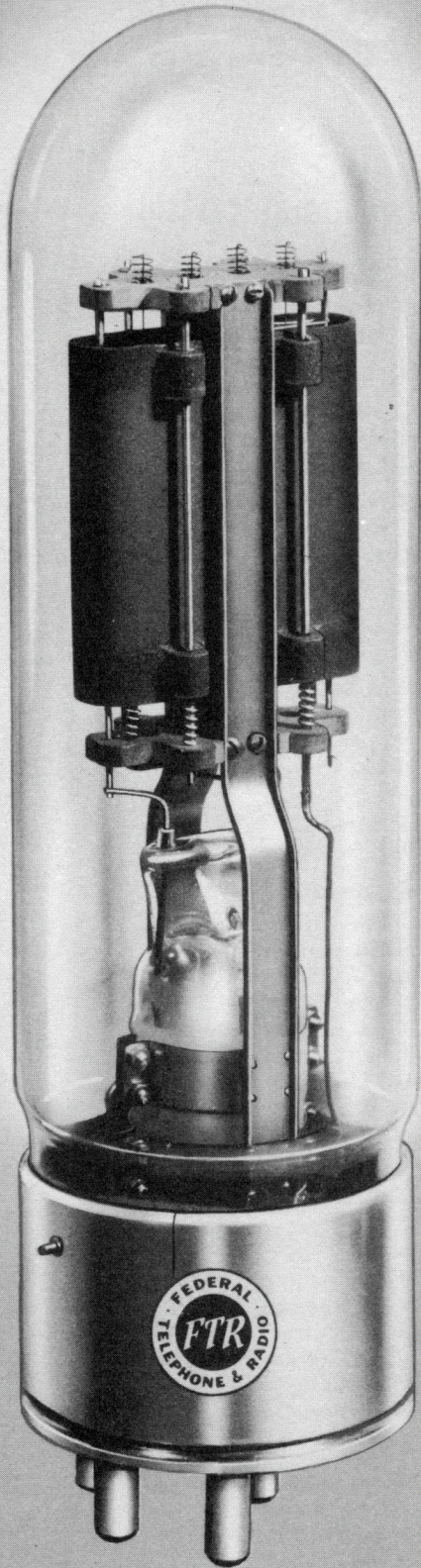


# FEDERAL POWER TRIODE

## Type F-212-E

275 Watts Plate Dissipation



### GENERAL DATA

#### DESCRIPTION:

Federal's F-212-E is a three-electrode tube designed for use as a modulator, R-F amplifier, and oscillator. The anode, radiation-cooled, is capable of dissipating 275 watts. The cathode is a thoriated tungsten filament. Maximum ratings apply up to 1.6 megacycles.

#### Electrical:

▶ Filament Voltage	14 Volts
▶ Filament Current	6 Amperes
▶ Amplification Factor	
$I_b = 0.2$ Amp.;	
$E_b = 1500$ Volts	16
▶ Interelectrode Capacitances	
Grid-Plate	19 $\mu\mu\text{f}$
Grid-Filament	14.5 $\mu\mu\text{f}$
Plate-Filament	8 $\mu\mu\text{f}$

#### Mechanical:

▶ Mounting Position—	
Vertical, Base Down	
▶ Type of Cooling—Radiation	
▶ Net Weight, approximate	1 Pound

Each F-212-E vacuum tube falls within one of four impedance classes and is stamped accordingly. These classifications are numbered 1, 2, 3 and 4, and are in no way a gradation of quality, but are to facilitate parallel operation in the ordinary system using a common grid bias. Where more than one tube is used, those of the same or adjacent classes should be employed so the load may be evenly distributed. When a single tube only is used, no one of the classes has any advantage over another. Tubes may not be ordered according to impedance classification.

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Those who for the first time give Federal tubes a trial, usually come back for more. *Federal superiority shows itself over and over again.*

### Maximum Ratings and Typical Operating Conditions

#### AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS A

##### Maximum Ratings, Absolute Values

DC Plate Voltage	2,000 Volts
Plate Input	275 Watts
Plate Dissipation	275 Watts

##### Typical Operation

DC Plate Voltage	2,000 Volts
DC Grid Voltage	—95 Volts
Peak A-F Grid Voltage	95 Volts
DC Plate Current	0.13 Amperes
Effective Load Resistance	8,000 Ohms
Distortion (% Second Harmonic)	4 Per Cent
Power Output, approximate	75 Watts

#### AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B

##### Maximum Ratings, Absolute Values

DC Plate Voltage	2,000 Volts
Max. Signal DC Plate Current†	0.35 Amperes
Max. Signal Plate Input†	700 Watts
Plate Dissipation†	275 Watts

##### Typical Operation

(Unless otherwise specified, values are for two tubes)

DC Plate Voltage	2,000 Volts
DC Grid Voltage	—110 Volts
Peak A-F Grid Voltage	420 Volts
Zero Signal DC Plate Current	0.09 Amperes
Max. Signal DC Plate Current	0.60 Amperes
Load Resistance, Plate to Plate	7,600 Ohms
Max. Signal Driving Power, approx.	12 Watts
Max. Signal Power Output, approx.	840 Watts

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

#### RADIO-FREQUENCY POWER AMPLIFIER—CLASS B

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

##### Maximum Ratings, Absolute Values

DC Plate Voltage	2,000 Volts
DC Plate Current	0.30 Amperes
Plate Input	400 Watts
Plate Dissipation	275 Watts

##### Typical Operation

DC Plate Voltage	1,600 Volts
DC Grid Voltage	—97 Volts
Peak R-F Grid Voltage	124 Volts
DC Plate Current	0.25 Amperes
DC Grid Current, approx.	0.003 Amperes
Driving Power, approx.‡	21 Watts
Power Output, approx.	137 Watts

‡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

DC Plate Voltage	1,500 Volts
DC Grid Voltage	—500 Volts
DC Plate Current	0.30 Amperes
DC Grid Current	0.075 Amperes
Plate Input	450 Watts
Plate Dissipation	190 Watts

##### Typical Operation

DC Plate Voltage	1,500 Volts
DC Grid Voltage	—200 Volts
Peak R-F Grid Voltage	295 Volts
DC Plate Current	0.267 Amperes
DC Grid Current, approx.	0.009 Amperes
Driving Power, approx.	2.5 Watts
Power Output, approx.	285 Watts

#### RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—CLASS C TELEGRAPHY

(Key-down conditions per tube without amplitude Modulation)†

##### Maximum Ratings, Absolute Values

DC Plate Voltage	2,000 Volts
DC Grid Voltage	—500 Volts
DC Plate Current	0.35 Amperes
DC Grid Current	0.075 Amperes
Plate Input	700 Watts
Plate Dissipation	275 Watts

##### Typical Operation

DC Plate Voltage	2,000 Volts
DC Grid Voltage	—250 Volts
Peak R-F Grid Voltage	380 Volts
DC Plate Current	0.325 Amperes
DC Grid Current, approx.	0.016 Amperes
Driving Power, approx.	6 Watts
Power Output, approx.	500 Watts

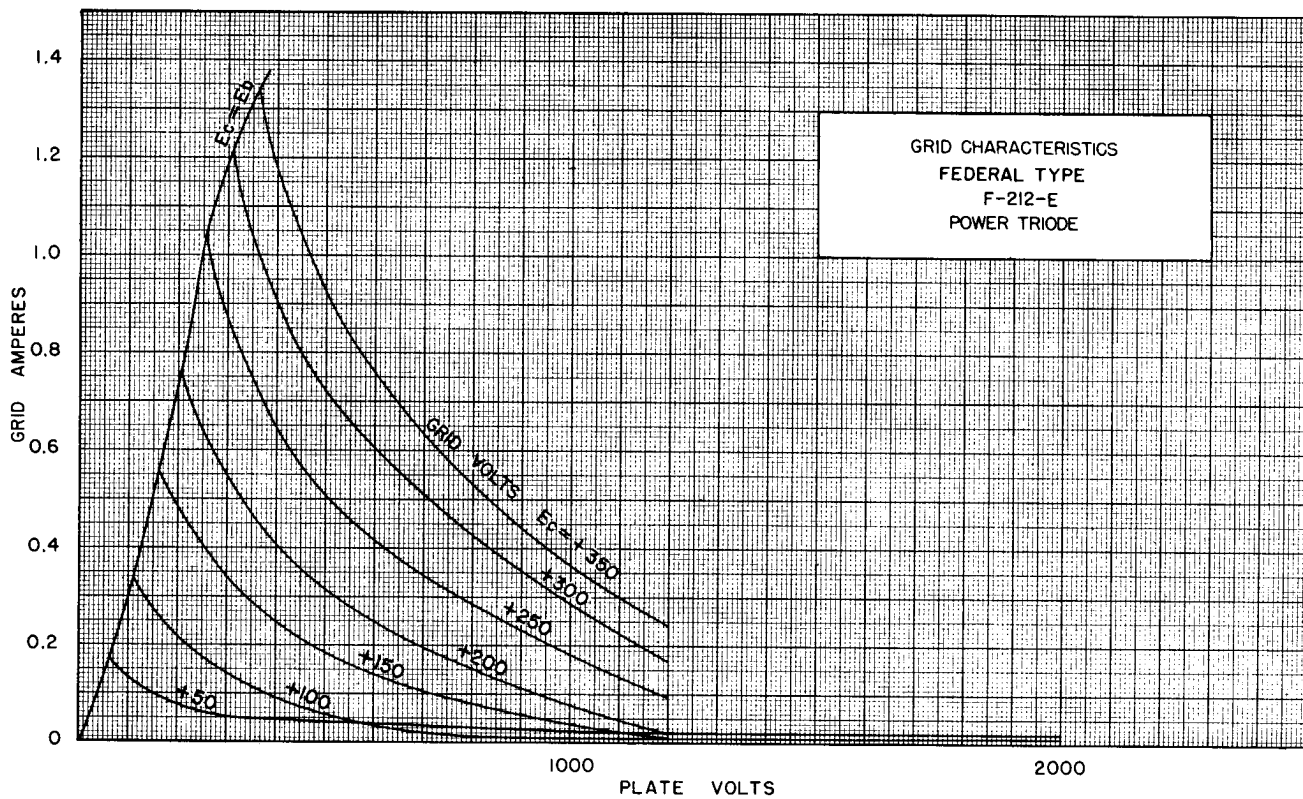
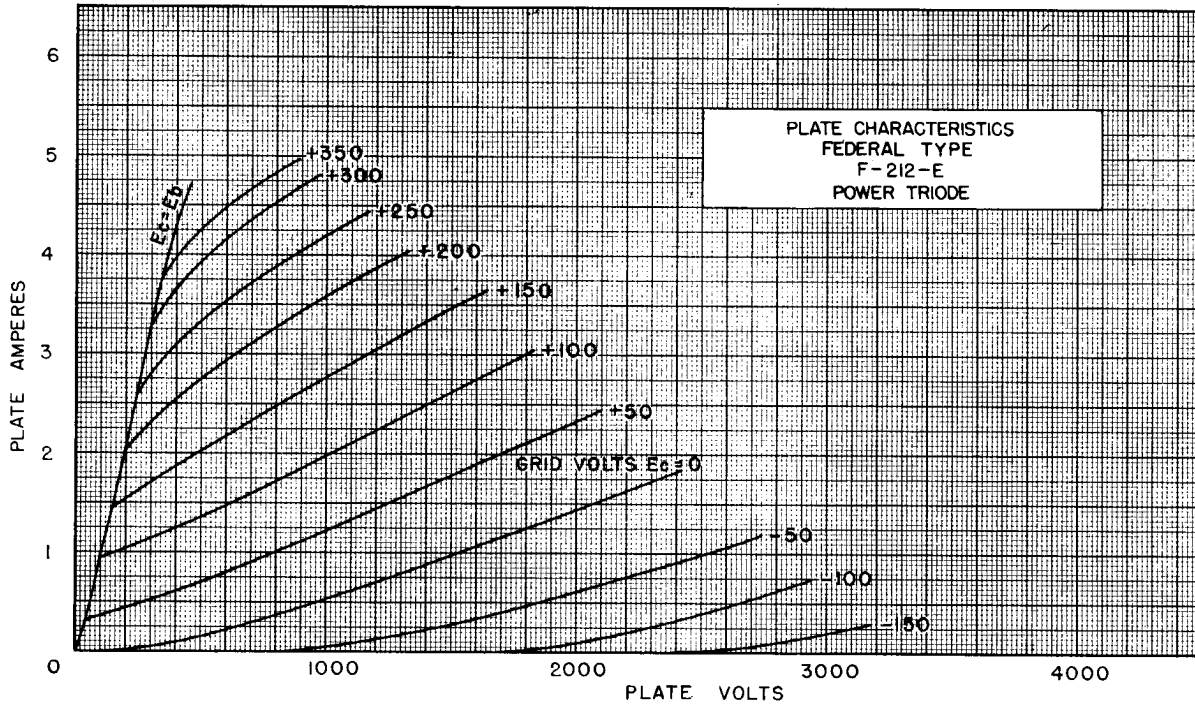
†Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of carrier conditions.

Long-life is an outstanding characteristic of Federal tubes . . . and when they're old, they are still vigorous, still efficient.

# FEDERAL POWER TRIODE

## Type F-212-E

275 Watts Plate Dissipation



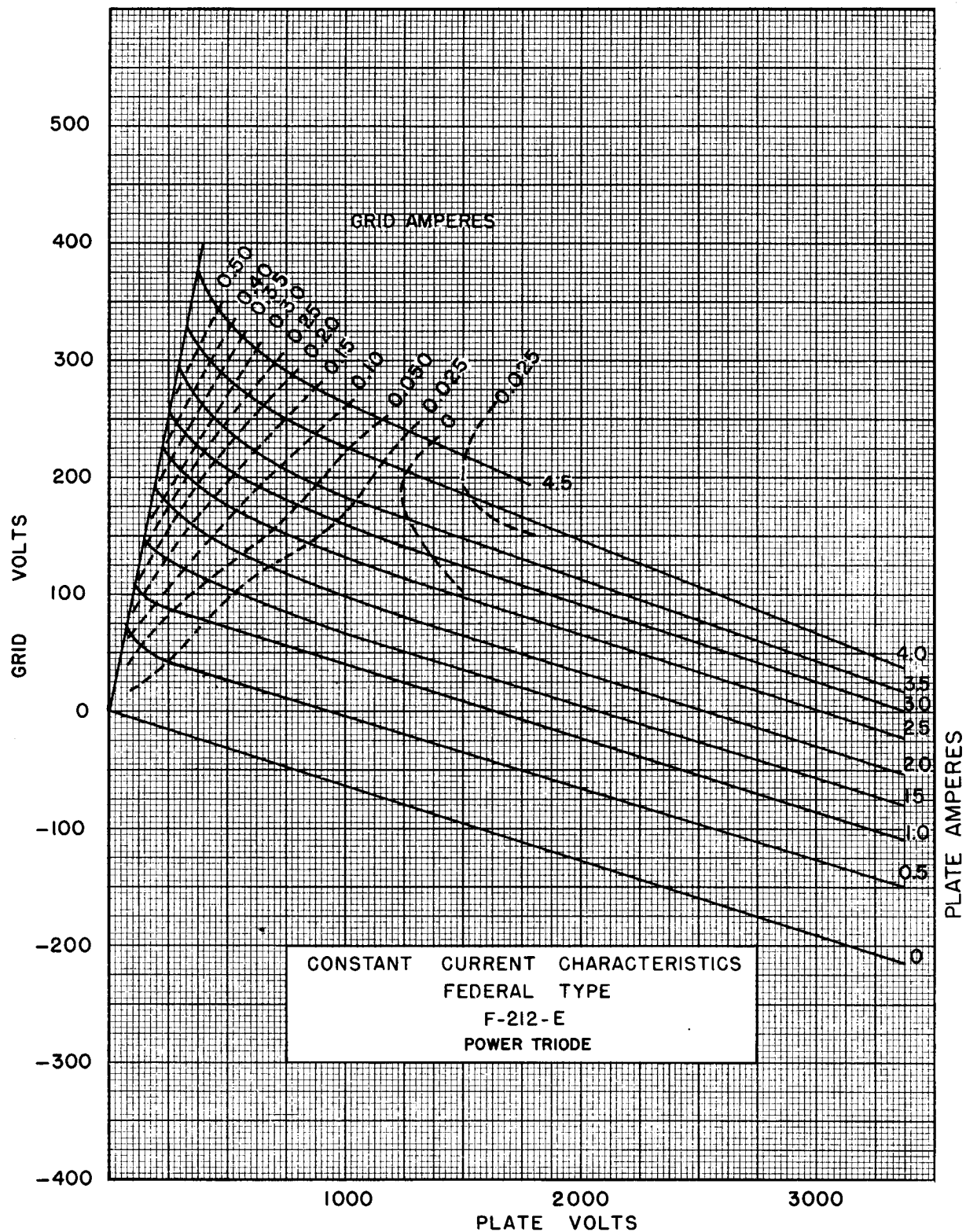
# FEDERAL POWER TRIODE

## Type F-212-E

275 Watts Plate Dissipation

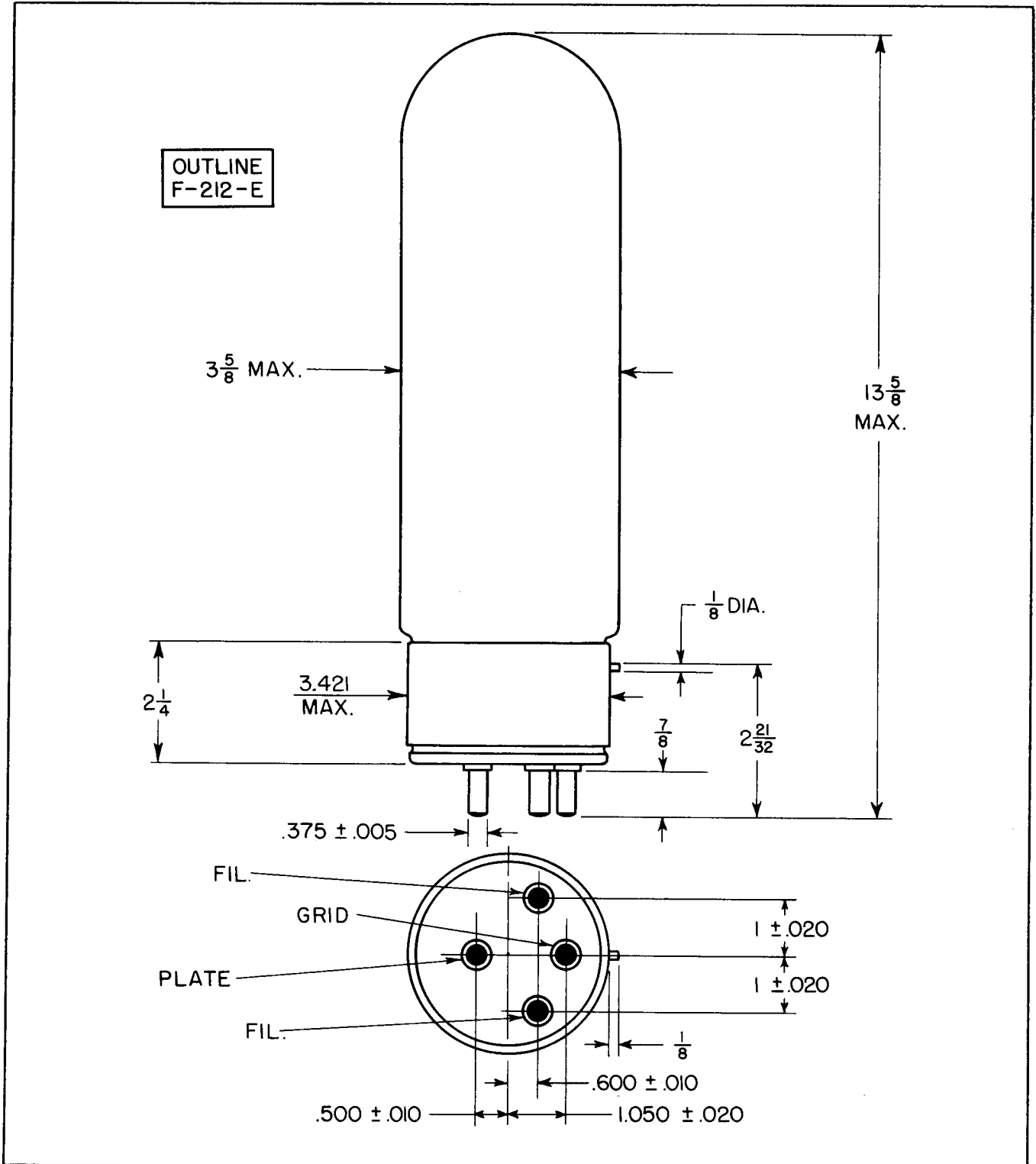


Federal tube development is a long-drawn-out process of design, experiment, test and re-test. Result: the highly refined tube.



Customers habitually appraise Federal values by what they get (for their money) in tube performance, in the kind and length of service rendered.

# FEDERAL POWER TRIODE Type F-212-E 275 Watts Plate Dissipation





***Federal Always Has  
Made Better Tubes***