

FEDERAL POWER TRIODE

Type F-9C29

20 Kilowatts Plate Dissipation



GENERAL DATA

DESCRIPTION:

The F-9C29 by Federal is a three-electrode tube engineered for modulator use in Class AB₁ circuits. The anode, forced-air-cooled, is capable of dissipating 20 kilowatts. The cathode, a thoriated tungsten multi-strand filament, may be operated on DC, 1 ϕ , 3 ϕ , or 6 ϕ AC excitation. Maximum ratings apply for audio-frequency use only.

Electrical:

- ▶ Filament Voltage§ 15 Volts
- ▶ Filament Current§ 135 Amperes
- ▶ Filament Starting Current§ 200 Amps. max.
- ▶ Filament Cold Resistance§ .019 Ohms
- ▶ Peak Cathode Current 45 Amperes
- ▶ Amplification Factor,
E_c = -1600 V; I_b = 3.0A 4.75
- ▶ Interelectrode Capacitances

Grid-Plate	50 $\mu\mu\text{f}$
Grid-Filament	56 $\mu\mu\text{f}$
Plate-Filament	20 $\mu\mu\text{f}$

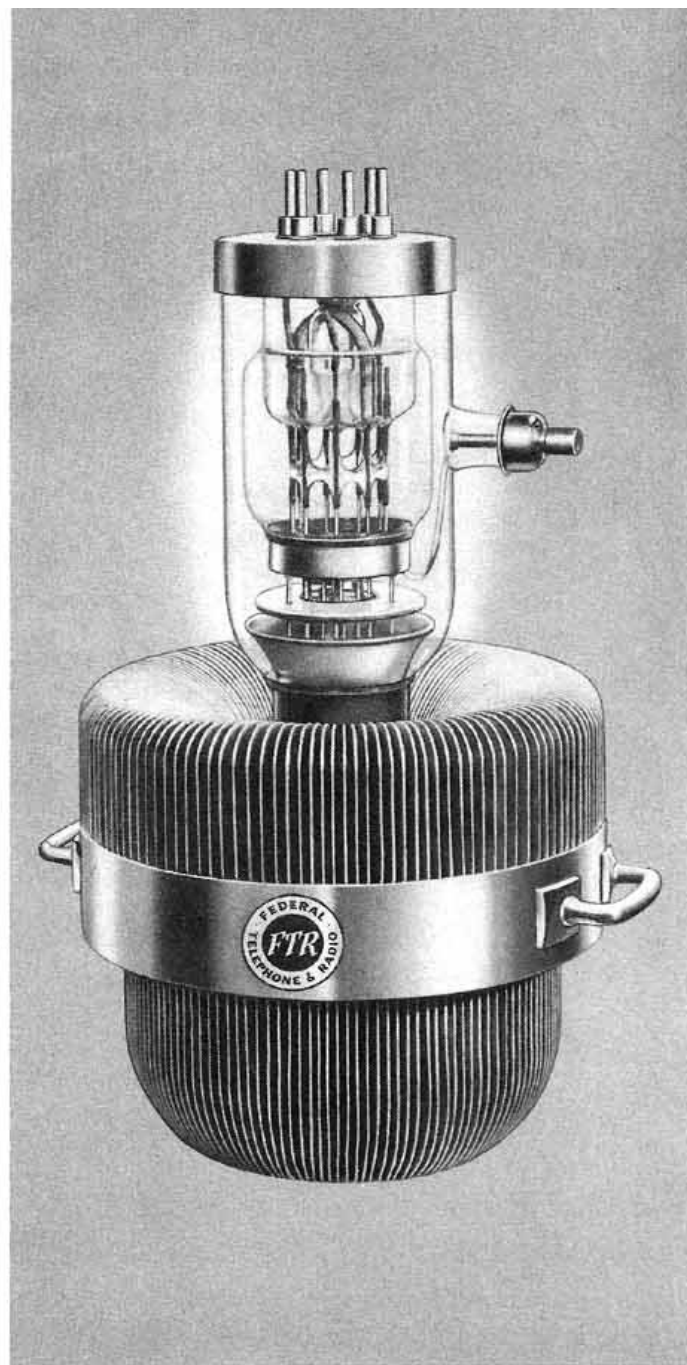
§Single phase excitation.

Mechanical:

- ▶ Mounting Position—
Vertical, Anode Down
- ▶ Type of Cooling—Forced Air

Maximum Incoming Air Temperature	45° C
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- ▶ Required Air Flow on Anode

Plate Dissipation (Kilowatts)	20	16	12
Air Flow—Cubic Feet per Min.	2,100	1,600	1,200
Pressure—Inches Water	2.15	1.24	0.70
- ▶ Maximum Glass
Temperature 150° C
- ▶ Net Weight,
approximate 202 Lbs.



Federal's name on a tube means superior high vacuum processing, ratings commensurate with design and application, quality control of materials used in manufacture, and superior craftsmanship. Federal always has made better tubes.

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Federal's F-9C29, air-cooled version of the F-9C28, is designed for use as a modulator in conjunction with the F-9C31.

Maximum Ratings and Typical Operating Conditions

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS AB₁

Maximum Ratings, Absolute Values

DC Plate Voltage	15,000 Volts
Maximum Signal DC Plate Current†	10 Amperes
Maximum Signal Plate Input†	50 Kilowatts
Plate Dissipation†	20 Kilowatts

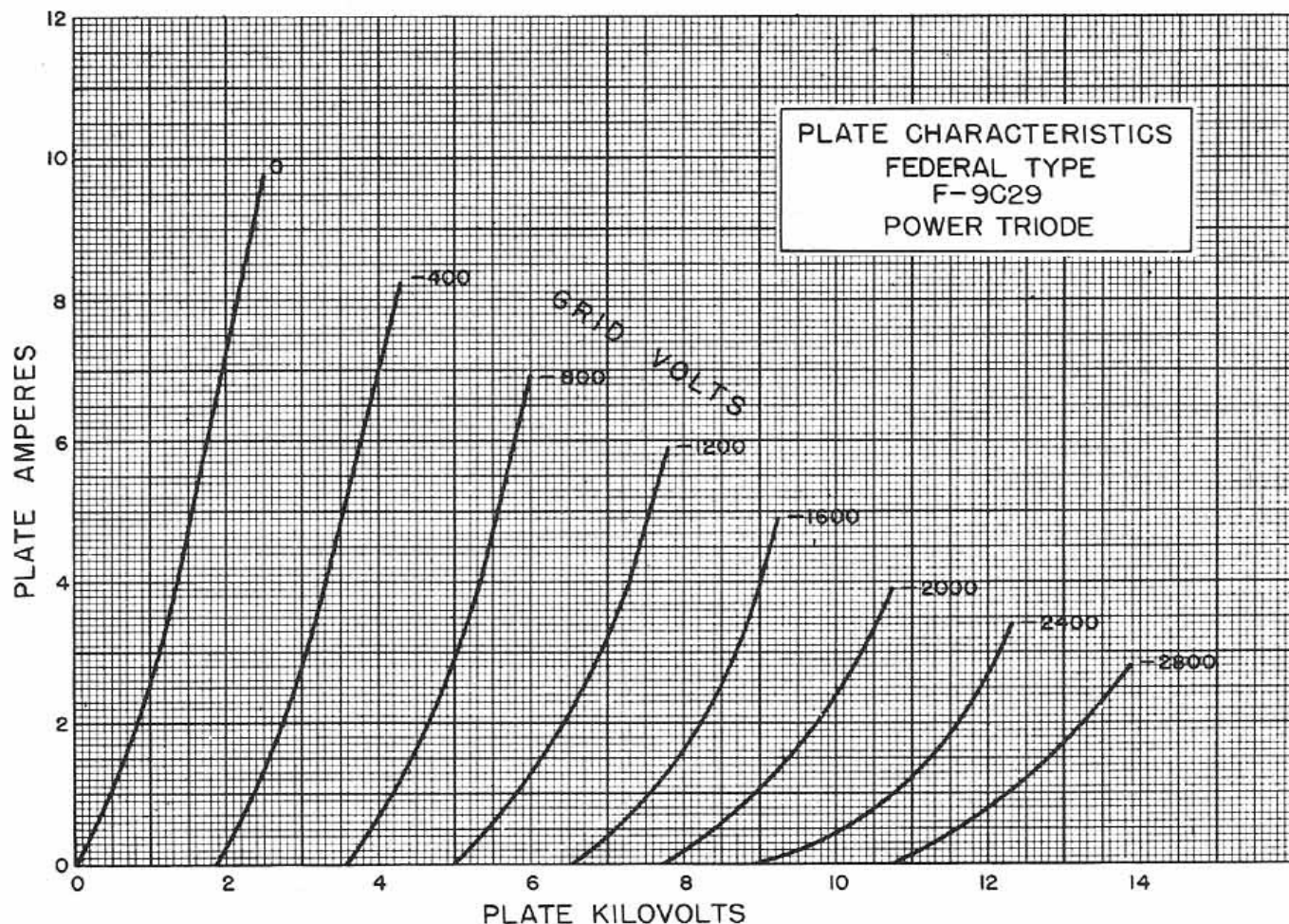
Typical Operation

(Unless otherwise specified, values are for two tubes)

DC Plate Voltage	10,000	12,000 Volts
DC Grid Voltage	-2,200	-2,600 Volts

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

Peak A-F Grid to Grid Voltage	4,380	5,160 Volts
Zero-Signal DC Plate Current	1.2	1.4 Amperes
Maximum Signal DC Plate Current	7.2	5.6 Amperes
Effective Load Resistance, Plate to Plate	2,600	4,500 Ohms
Maximum Signal Driving Power	0	0 Watts
Maximum Signal Power Output	39	39 Kilowatts

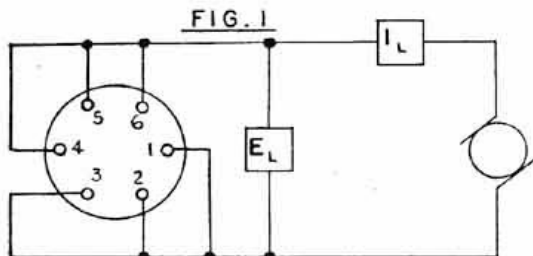


The heavy wall anode of Federal's F-9C29 means a more uniform heat distribution, a more efficient performance.

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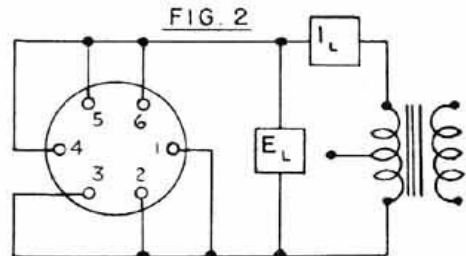
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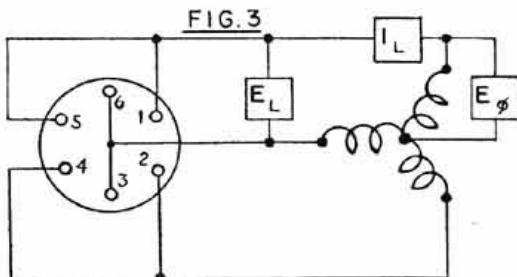
D.C. CONNECTION

$E_L = 'X' \text{ VOLTS D.C.}$
 $I_L = 'Y' \text{ AMPS. D.C.}$



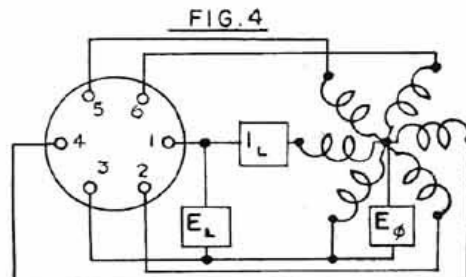
SINGLE-PHASE A.C. CONNECTION

$E_L = 'X' \text{ VOLTS A.C.}$
 $I_L = 'Y' \text{ AMPS. A.C.}$



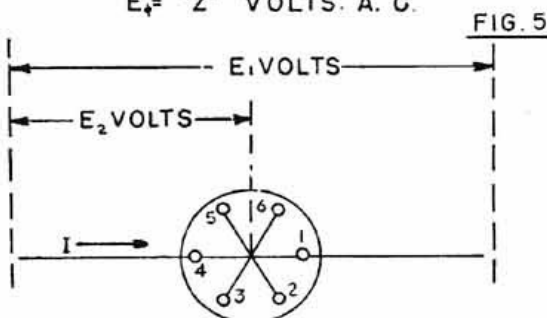
THREE-PHASE A.C. CONNECTION

$E_L = 'X' \text{ VOLTS A.C.}$
 $I_L = 'Y' \text{ AMPS. A.C.}$
 $E_\phi = 'Z' \text{ VOLTS A.C.}$



SIX-PHASE A.C. CONNECTION

$E_L = 'X' \text{ VOLTS A.C.}$
 $I_L = 'Y' \text{ AMPS. A.C.}$
 $E_\phi = 'Z' \text{ VOLTS A.C.}$



INTERNAL CONNECTION OF FILAMENTS

NUMBERS 1 TO 6 INCLUSIVE ON CONNECTIONS DENOTE BASE TERMINALS.

FIG.	U	V	W	X	Y	Z
1				15	135	
2				15	135	
3				13	90	7.5
4				7.5	45	7.5
5	15	7.5	45			

MULTI-PHASE FILAMENT CONNECTIONS

$E_1 = 'U' \text{ VOLTS D.C. OR A.C.}$
 TERMINAL TO TERMINAL VOLTAGE.

$E_2 = 'V' \text{ VOLTS D.C. OR A.C.}$
 VOLTAGE PER FILAMENT STRAND *i.e.* FROM TERMINAL TO COMMON TERMINAL CONNECTION.

$I = 'W' \text{ AMPERES CURRENT PER FILAMENT TERMINAL.}$

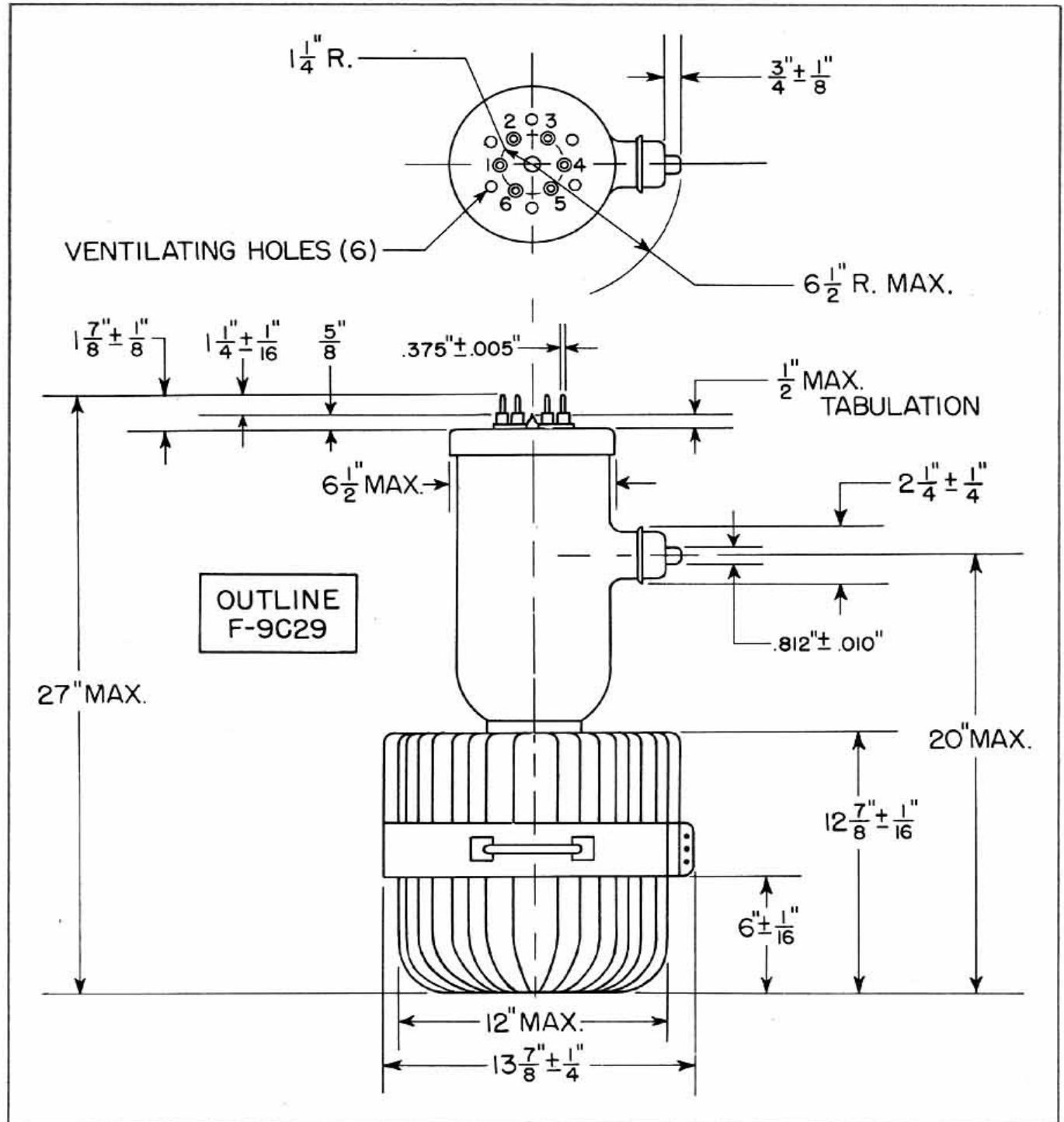
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Federal always has made tubes of the very finest quality.



Form FJ-430. Printed in U. S. A.

