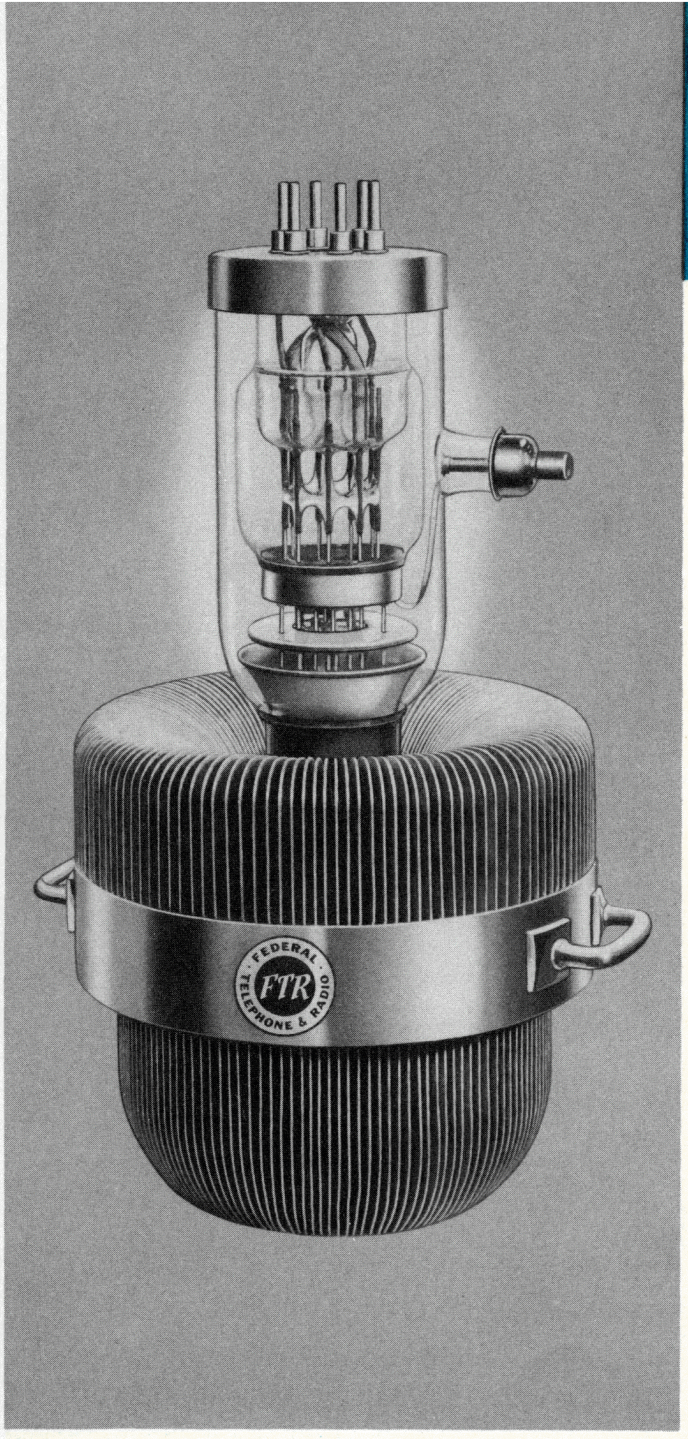
FEDERAL POWER TRIODE
Type F-9C29
20 Kilowatts Plate Dissipation



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.*

GENERAL DATA

DESCRIPTION:

The F-9C29 by Federal is a three-electrode tube engineered for modulator use in Class AB_1 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, 1Ø, 3Ø, or 6Ø 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; $I_b = 3.0$A	4.75
Interelectrode Capacitances	
Grid-Plate	50 $\mu\mu$f
Grid-Filament	56 $\mu\mu$f
Plate-Filament	20 $\mu\mu$f

§Single phase excitation.

Mechanical:

Mounting Position— Vertical, Anode Down			
Type of Cooling—Forced Air			
Maximum Incoming Air Temperature			45° C
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.

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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 AB_1

Maximum Ratings, Absolute Values

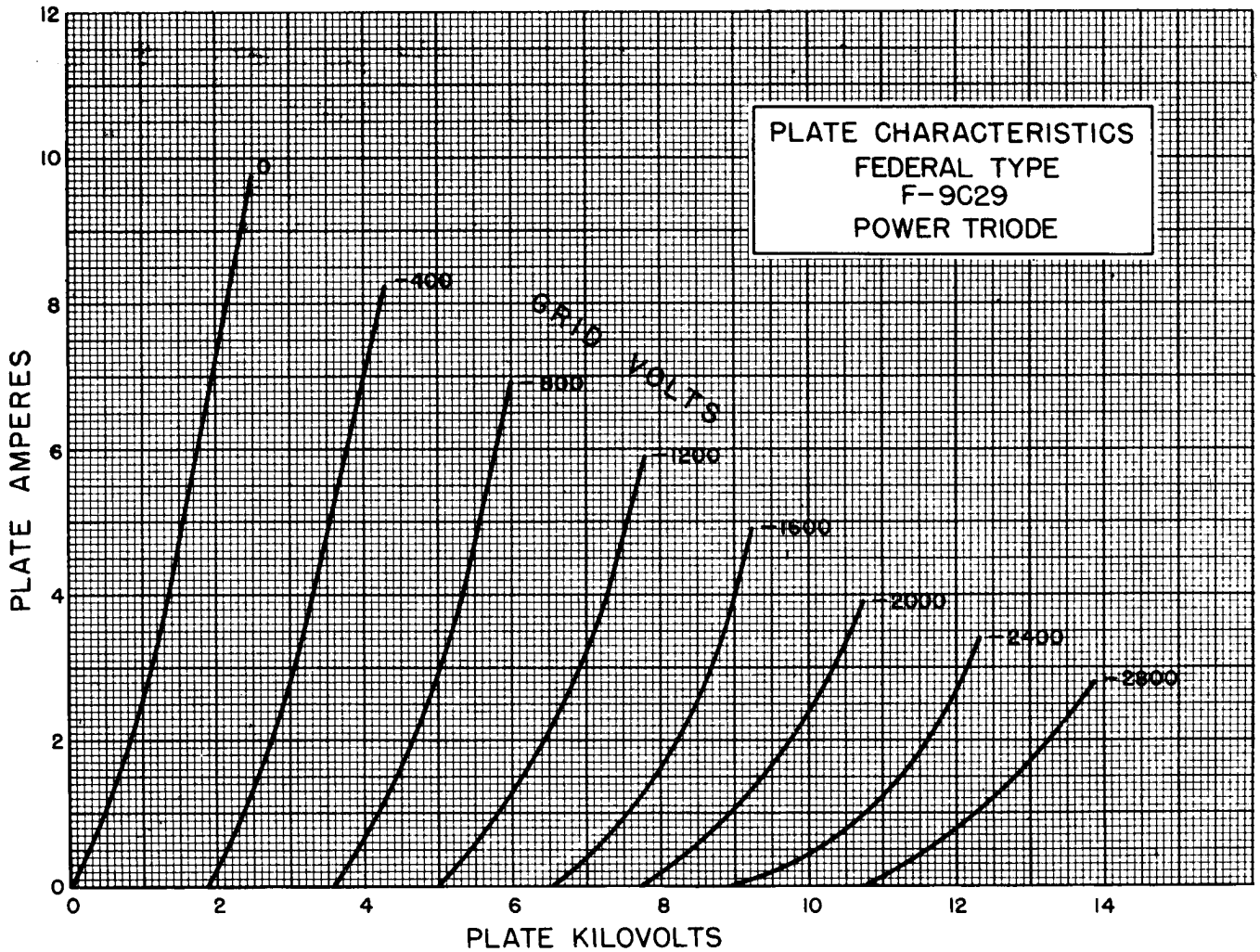
DC Plate Voltage	15,000 Volts
Maximum Signal DC Plate Current†	10 Amperes
Maximum Signal Plate Input†	50 Kilowatts
Plate Dissipation†	20 Kilowatts

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
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

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



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

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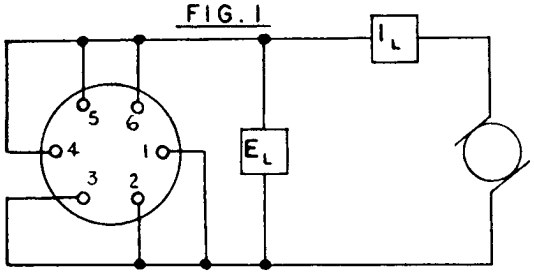
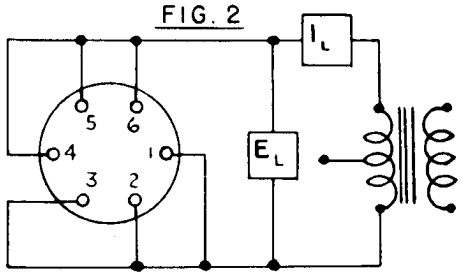
FIG. 1



D.C. CONNECTION

E_L = 'X' VOLTS D.C.
I_L = 'Y' AMPS. D.C.

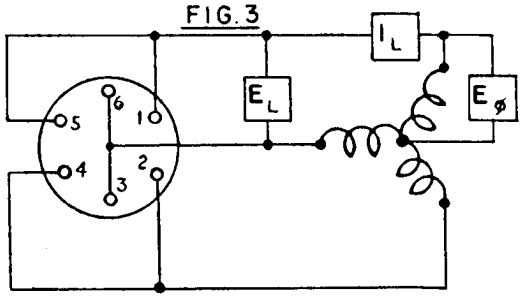
FIG. 2



SINGLE-PHASE A.C. CONNECTION

E_L = 'X' VOLTS A.C.
I_L = 'Y' AMPS. A.C.

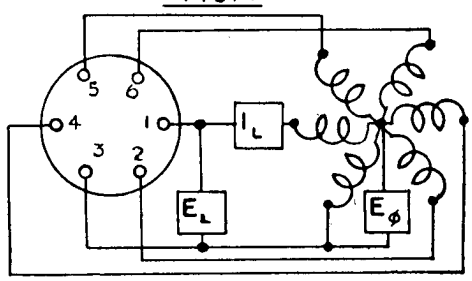
FIG. 3



THREE-PHASE A.C. CONNECTION

E_L = 'X' VOLTS A.C.
I_L = 'Y' AMPS. A.C.
E_ϕ = 'Z' VOLTS. A.C.

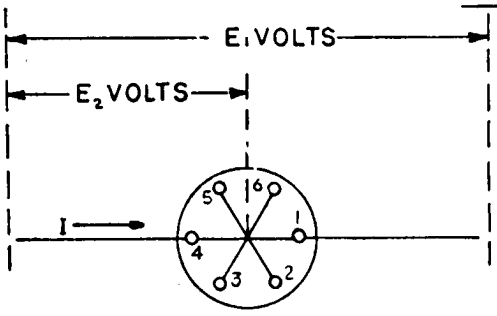
FIG. 4



SIX-PHASE A.C. CONNECTION

E_L = 'X' VOLTS A.C.
I_L = 'Y' AMPS. A.C.
E_ϕ = 'Z' VOLTS. A.C.

FIG. 5



INTERNAL CONNECTION OF FILAMENTS

NUMBERS 1 TO 6 INCLUSIVE ON CONNECTIONS DENOTE BASE TERMINALS.

E_1 = 'U' VOLTS D.C. OR A.C. TERMINAL TO TERMINAL VOLTAGE.

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

I = 'W' AMPERES CURRENT PER FILAMENT TERMINAL.

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

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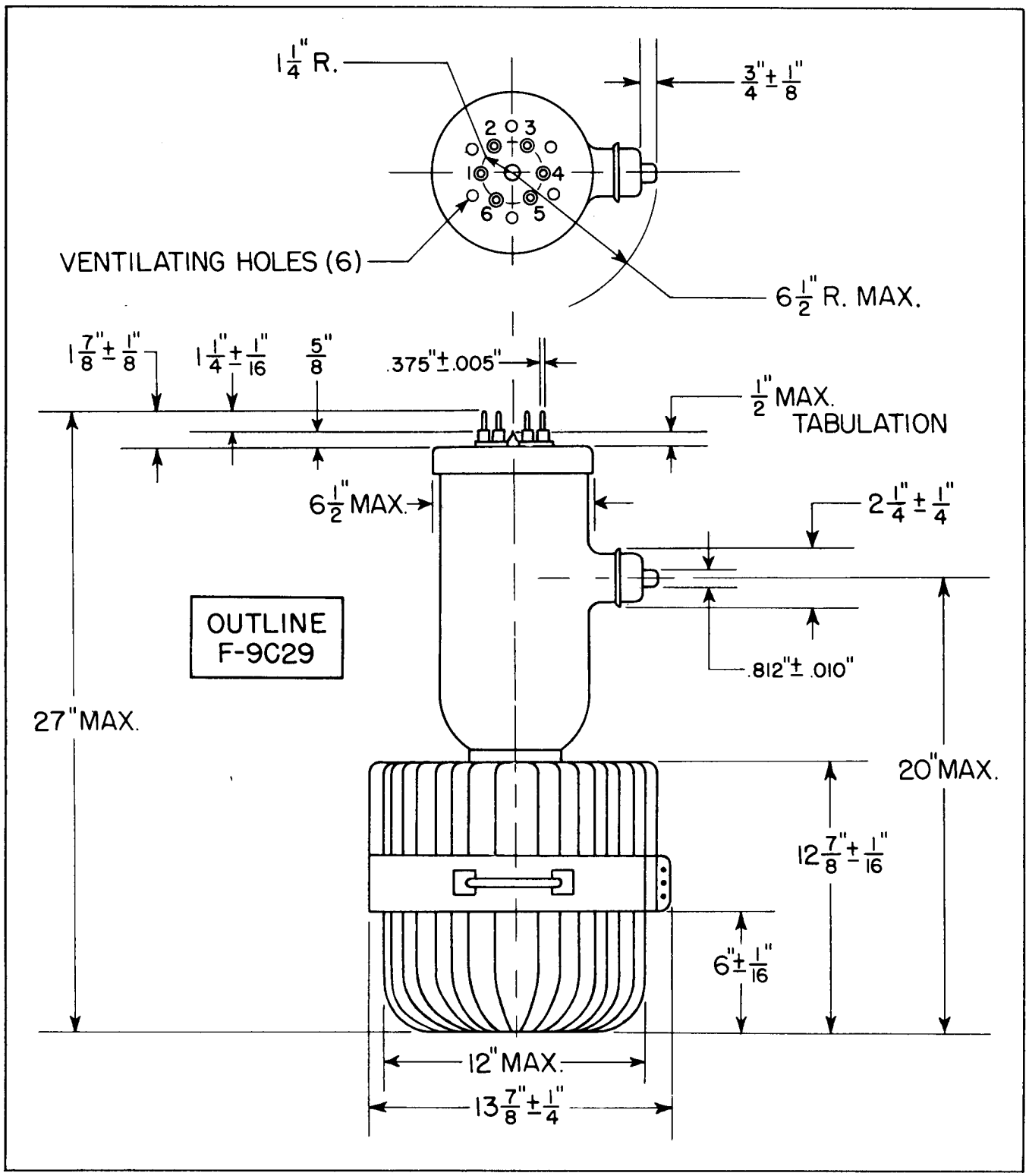

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