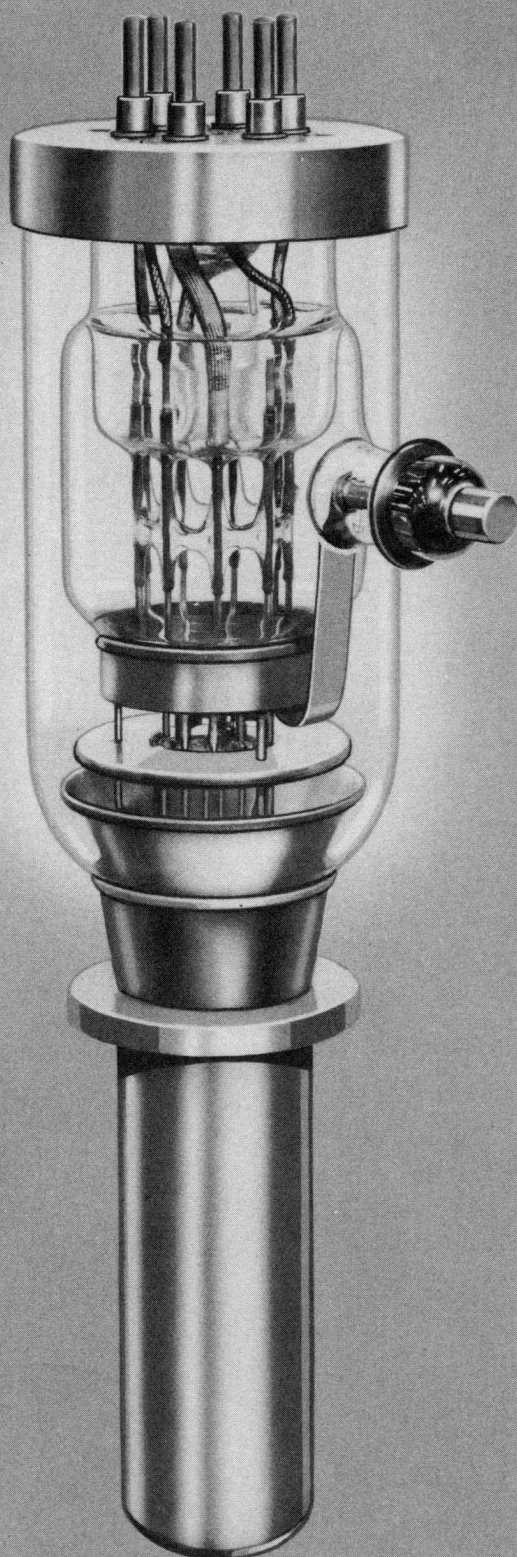


## Type F-9C28

40 Kilowatts Plate Dissipation



### GENERAL DATA

#### DESCRIPTION:

Federal's F-9C28 is a three-electrode tube designed for use as a modulator in Class AB<sub>1</sub> circuits. The anode is water-cooled, capable of dissipating 40 kilowatts. The cathode is a thoriated tungsten multi-strand filament and may be operated on DC, 1 $\phi$ , 3 $\phi$ , or 6 $\phi$  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, $E_c = -1,600 \text{ V}; I_b = 3.0\text{A}$	4.75

#### ▶ Interelectrode Capacitances

Grid-Plate	45 $\mu\mu\text{f}$
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—Water	Minimum Water Flow
on Anode	20 GPM
Maximum Outgoing	Water Temperature
	70° C
Maximum Glass	Temperature
	150° C
▶ Net Weight, approx.	11 1/2 Pounds

# FEDERAL POWER TRIODE

## Type F-9C28

40 Kilowatts Plate Dissipation



The F-9C28 is Federal's thoriated tungsten filament low  $\mu$  modulator tube for use in conjunction with the F-9C30.

### Maximum Ratings and Typical Operating Conditions

#### AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS AB<sub>1</sub>

##### Maximum Ratings, Absolute Values

DC Plate Voltage	15,000 Volts
Maximum Signal DC Plate Current†	10 Amperes
Maximum Signal Plate Input†	100 Kilowatts
Plate Dissipation†	40 Kilowatts

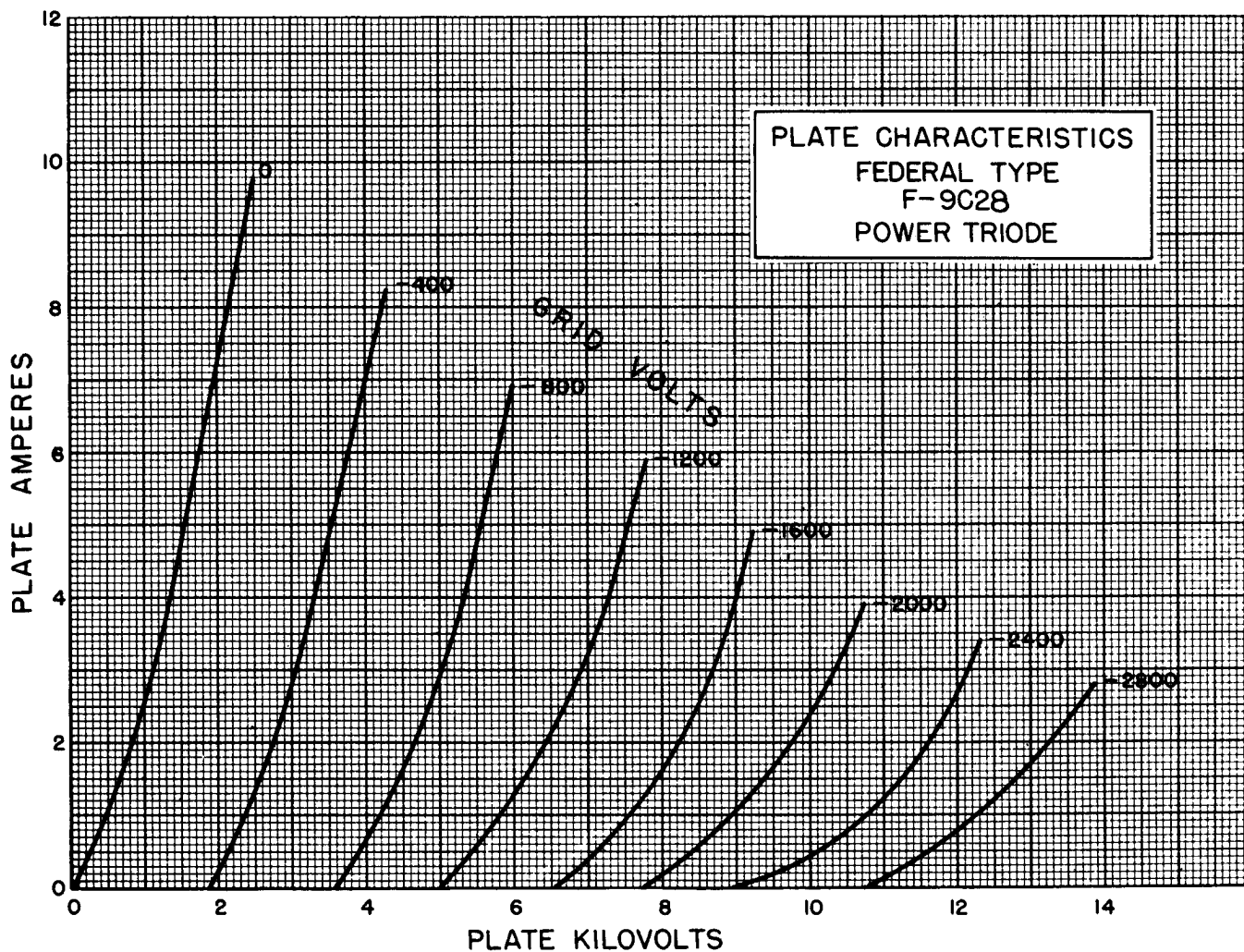
##### Typical Operation

(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 at 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

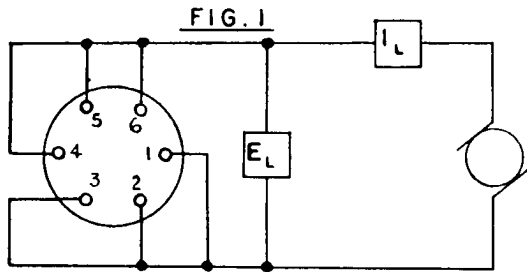


Up to 100 kilowatts of audio power is available . . . from two Federal F-9C28 tubes in a Class AB modulator.

# FEDERAL POWER TRIODE

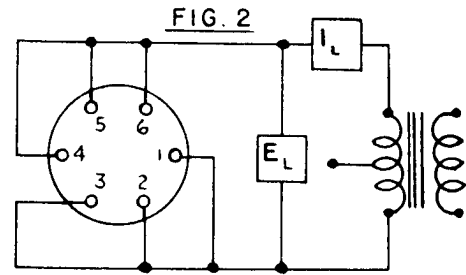
## Type F-9C28

40 Kilowatts Plate Dissipation



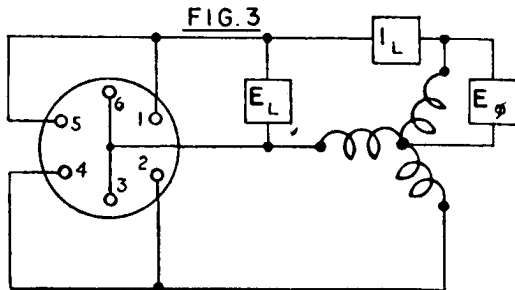
**D.C. CONNECTION**

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



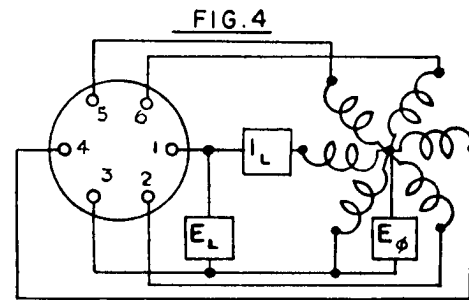
**SINGLE-PHASE A.C. CONNECTION**

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



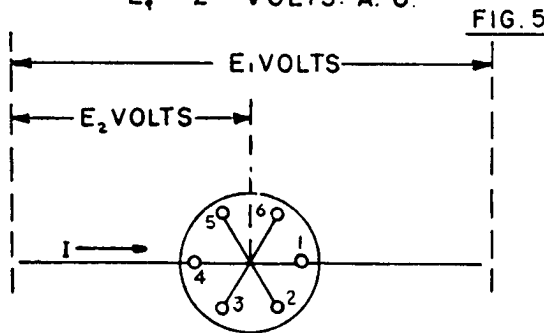
**THREE-PHASE A.C. CONNECTION**

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



**SIX-PHASE A.C. CONNECTION**

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



**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**



FEDERAL POWER TRIODE

# Type F-9C28

40 Kilowatts Plate Dissipation



One of the *first* to manufacture power tubes, Federal's experience goes back to the earliest days of the industry.

