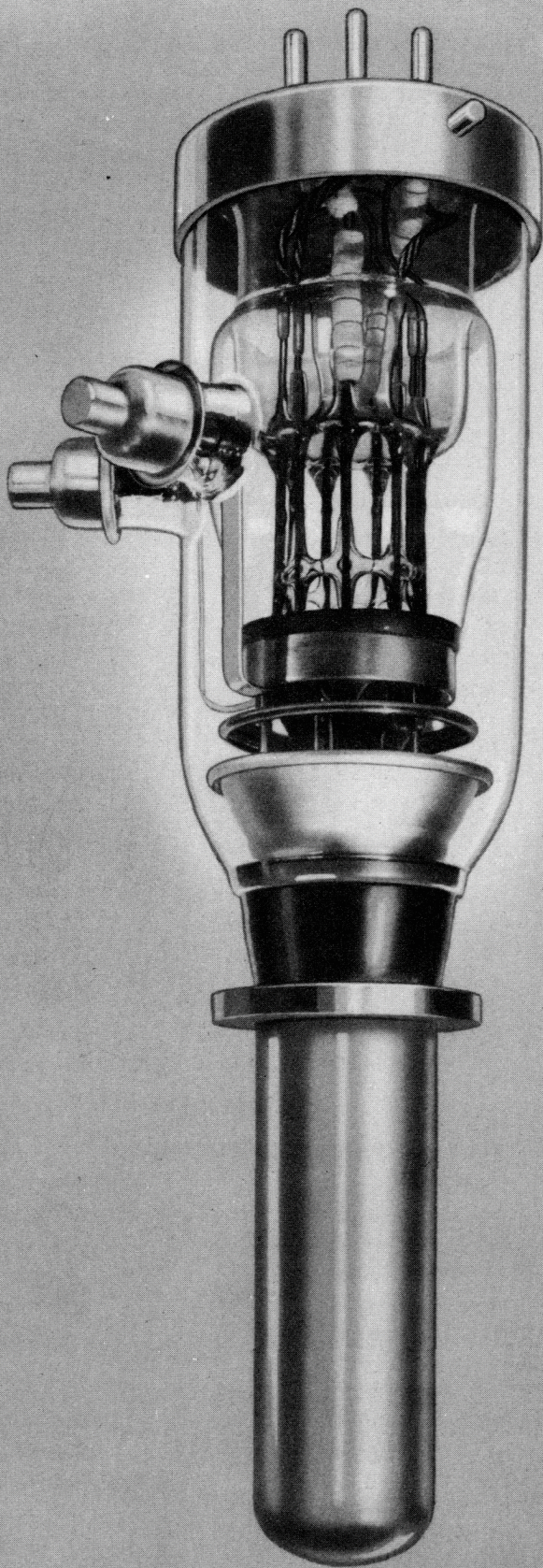




# FEDERAL POWER TRIODE

## Type F-9C30

### 40 Kilowatts Plate Dissipation



#### GENERAL DATA

##### DESCRIPTION:

The F-9C30 is a three-electrode tube, Federal-designed, for use as a radio-frequency amplifier, oscillator, or Class B modulator. The anode, water-cooled, is capable of dissipating 40 kilowatts. The cathode is a thoriated tungsten multi-strand filament, and may be operated on direct current, single-phase, three-phase, or six-phase alternating current excitation. Maximum ratings apply up to 20 megacycles.

##### Electrical:

|                                                              |                  |
|--------------------------------------------------------------|------------------|
| ► Filament Voltage§                                          | 15 Volts         |
| ► Filament Current§                                          | 135 Amperes      |
| ► Filament Starting Current§                                 | 200 Amperes max. |
| ► Filament Cold Resistance§                                  | .019 Ohms        |
| ► Peak Cathode Current                                       | 45 Amperes       |
| ► Amplification Factor, at<br>$E_c = -200V \quad I_b = 1.6A$ | 40.5             |
| ► Interelectrode Capacitances                                |                  |
| Grid-Plate                                                   | 35 $\mu\mu f$    |
| Grid-Filament                                                | 46 $\mu\mu f$    |
| Plate-Filament                                               | 5.6 $\mu\mu f$   |

§Single phase excitation.

##### Mechanical:

|                                       |                      |
|---------------------------------------|----------------------|
| ► Mounting Position—                  | Vertical, anode down |
| ► Type of Cooling—Water               |                      |
| Minimum Water Flow on<br>Anode        | 15 GPM.              |
| Maximum Outgoing Water<br>Temperature | 70° C                |
| Maximum Glass Temperature             | 150° C               |
| ► Net Weight, approximate             | 11½ Pounds           |

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# FEDERAL POWER TRIODE

## Type F-9C30

### 40 Kilowatts Plate Dissipation



Federal was the first in the industry to develop, engineer and produce thoriated tungsten filaments in high-power tubes.

## Maximum Ratings and Typical Operating Conditions

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

#### Maximum Ratings, Absolute Values

|                                  |              |
|----------------------------------|--------------|
| DC Plate Voltage                 | 15,000 Volts |
| Maximum Signal DC Plate Current† | 5 Amperes    |
| Maximum Signal Plate Input†      | 50 Kilowatts |
| Plate Dissipation†               | 30 Kilowatts |

#### Typical Operation

(Unless otherwise specified, values are for two tubes)

|                                           |              |
|-------------------------------------------|--------------|
| DC Plate Voltage                          | 10,000 Volts |
| DC Grid Voltage                           | —200 Volts   |
| Peak A-F Grid-to-Grid Voltage             | 1,600 Volts  |
| Zero Signal DC Plate Current              | 0.5 Amperes  |
| Maximum Signal DC Plate Current           | 6.0 Amperes  |
| Effective Load Resistance, Plate to Plate | 3,750 Ohms   |
| Maximum Signal Driving Power, approximate | 360 Watts    |
| Maximum Signal Power Output, approximate  | 39 Kilowatts |

†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  | 15,000 Volts |
| DC Plate Current  | 4 Amperes    |
| Plate Input       | 60 Kilowatts |
| Plate Dissipation | 40 Kilowatts |

#### Typical Operation

|                              |                |
|------------------------------|----------------|
| DC Plate Voltage             | 15,000 Volts   |
| DC Grid Voltage              | —200 Volts     |
| Peak R-F Grid Voltage        | 470 Volts      |
| DC Plate Current             | 2.7 Amperes    |
| DC Grid Current, approximate | 0.0 Amperes    |
| Driving Power, approximate‡  | 480 Watts      |
| Power Output, approximate    | 13.7 Kilowatts |

‡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  | 12,000 Volts |
| DC Grid Voltage   | —3,000 Volts |
| DC Plate Current  | 4.5 Amperes  |
| DC Grid Current   | 1 Ampere     |
| Plate Input       | 54 Kilowatts |
| Plate Dissipation | 30 Kilowatts |

#### Typical Operation

|                              |                |
|------------------------------|----------------|
| DC Plate Voltage             | 12,000 Volts   |
| DC Grid Voltage              | —750 Volts     |
| Peak R-F Grid Voltage        | 1,510 Volts    |
| DC Plate Current             | 3.1 Amperes    |
| DC Grid Current, approximate | 0.48 Amperes   |
| Driving Power, approximate   | 700 Watts      |
| Power Output, approximate    | 27.2 Kilowatts |

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

(Key-down conditions per tube without amplitude modulation)¶

#### Maximum Ratings, Absolute Values

|                   |               |
|-------------------|---------------|
| DC Plate Voltage  | 15,000 Volts  |
| DC Grid Voltage   | —3,000 Volts  |
| DC Plate Current  | 8 Amperes     |
| DC Grid Current   | 1 Ampere      |
| Plate Input       | 120 Kilowatts |
| Plate Dissipation | 40 Kilowatts  |

#### Typical Operation

|                              |              |
|------------------------------|--------------|
| DC Plate Voltage             | 15,000 Volts |
| DC Grid Voltage              | —900 Volts   |
| Peak R-F Grid Voltage        | 1,940 Volts  |
| DC Plate Current             | 4.7 Amperes  |
| DC Grid Current, approximate | 0.75 Amperes |
| Driving Power, approximate   | 1,350 Watts  |
| Power Output, approximate    | 52 Kilowatts |

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

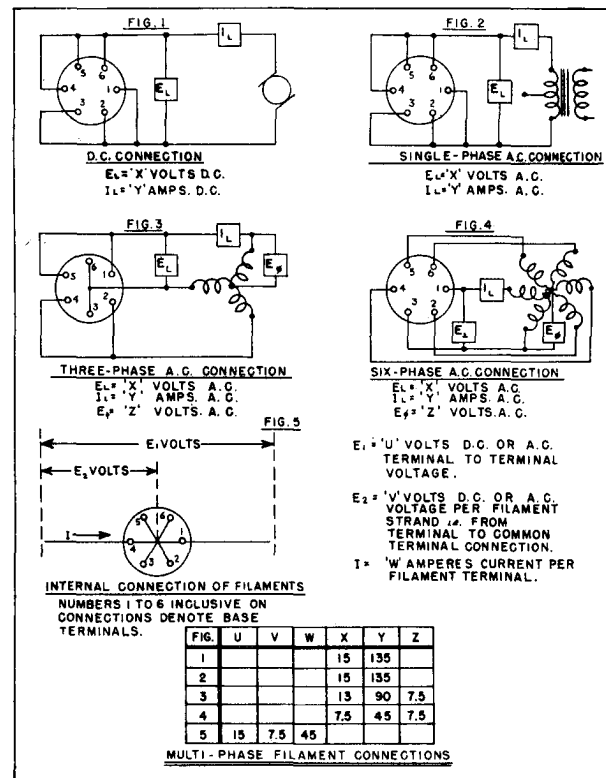
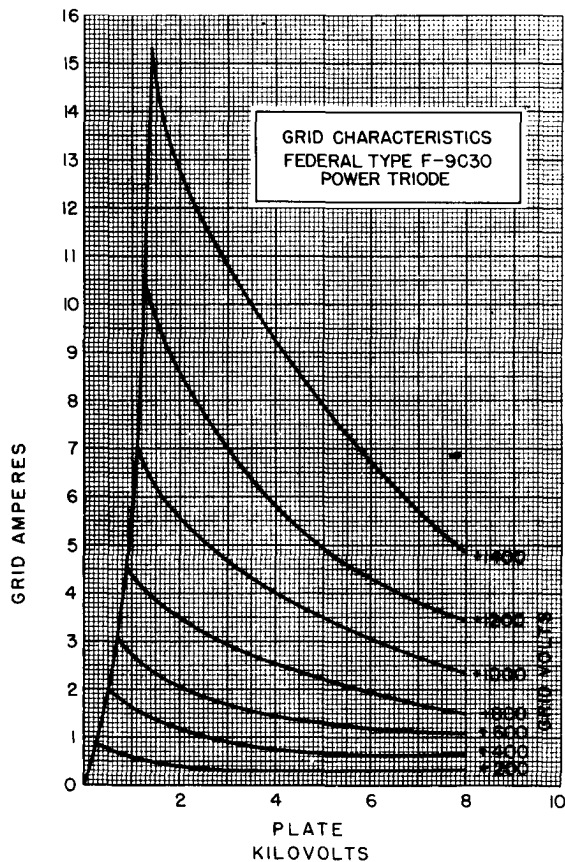
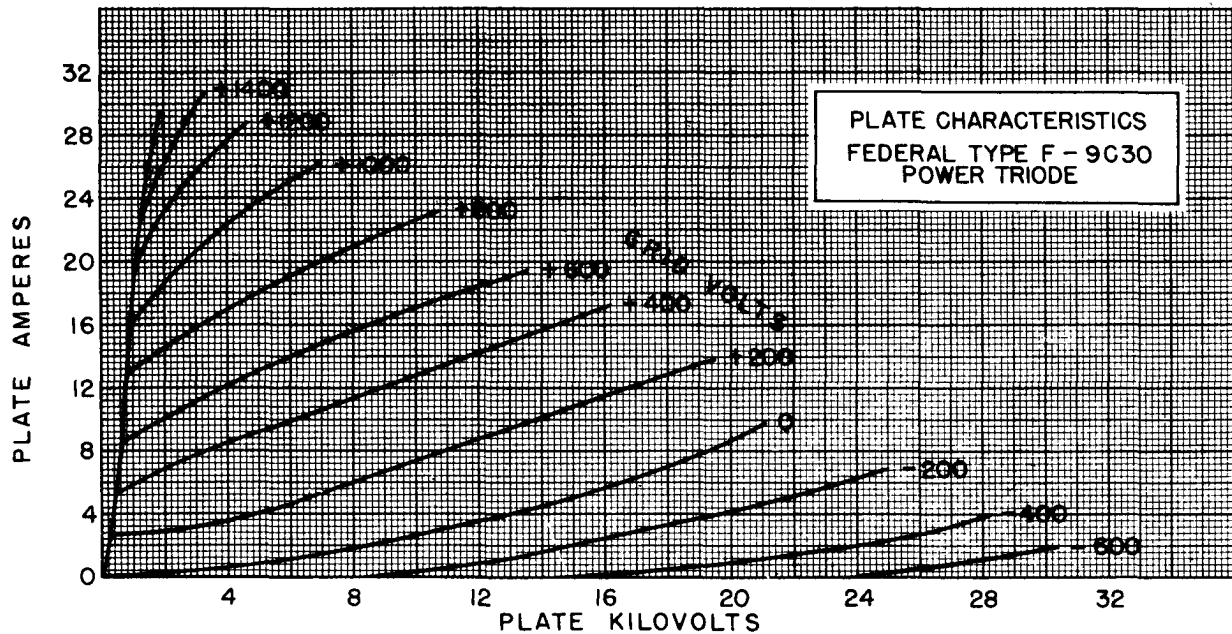


Typical triodes using Federal thoriated tungsten filaments are F-9C30 and F-9C31 power amplifiers . . . F-9C28 and F-9C29 modulators.

# FEDERAL POWER TRIODE

## Type F-9C30

### 40 Kilowatts Plate Dissipation



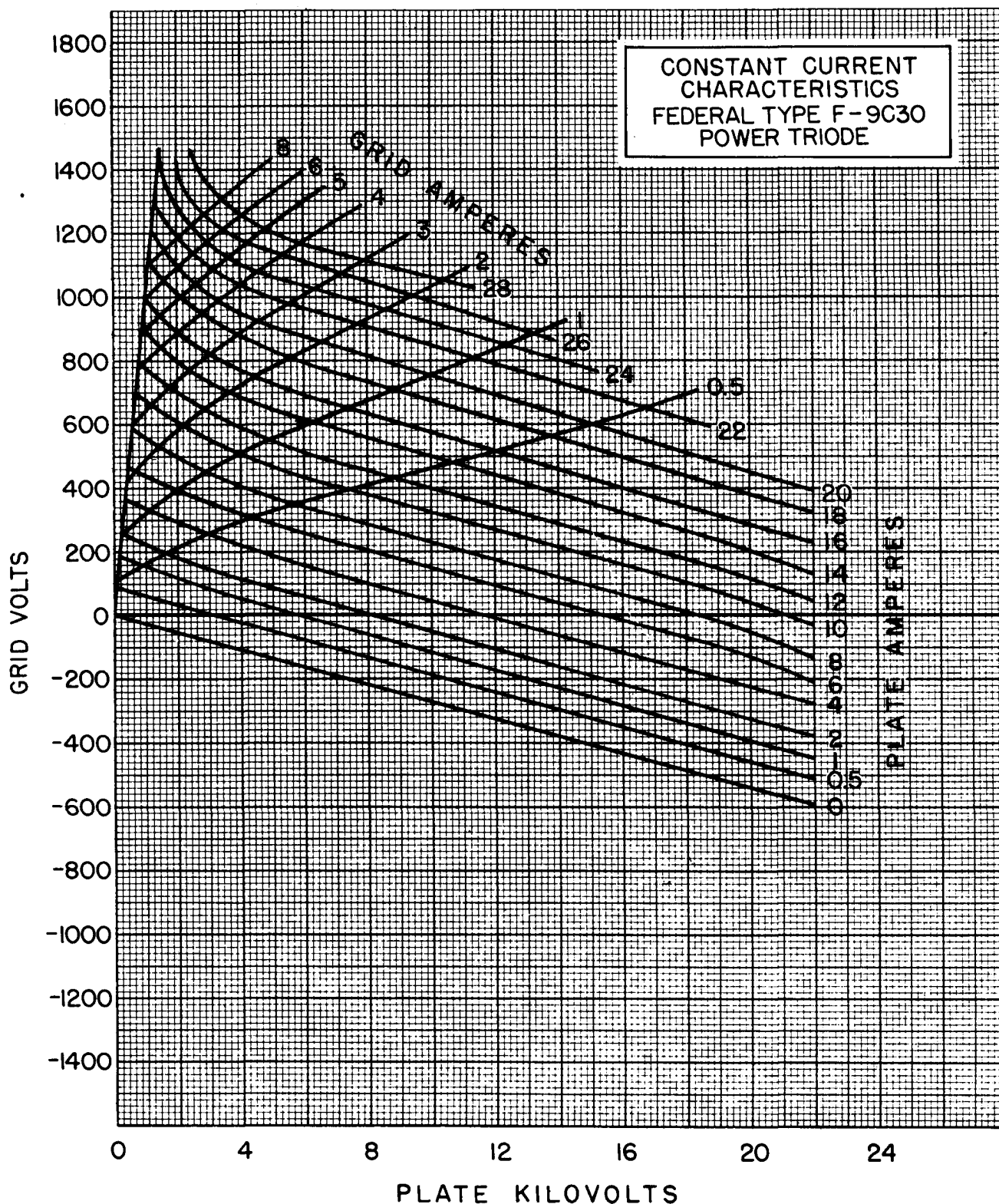
# FEDERAL POWER TRIODE

## Type F-9C30

40 Kilowatts Plate Dissipation



Federal's newest triodes for 50 KW transmitters . . . F-9C30 and F-9C28 . . . give greater electron emission with less filament power, lower hum level, and longer life.

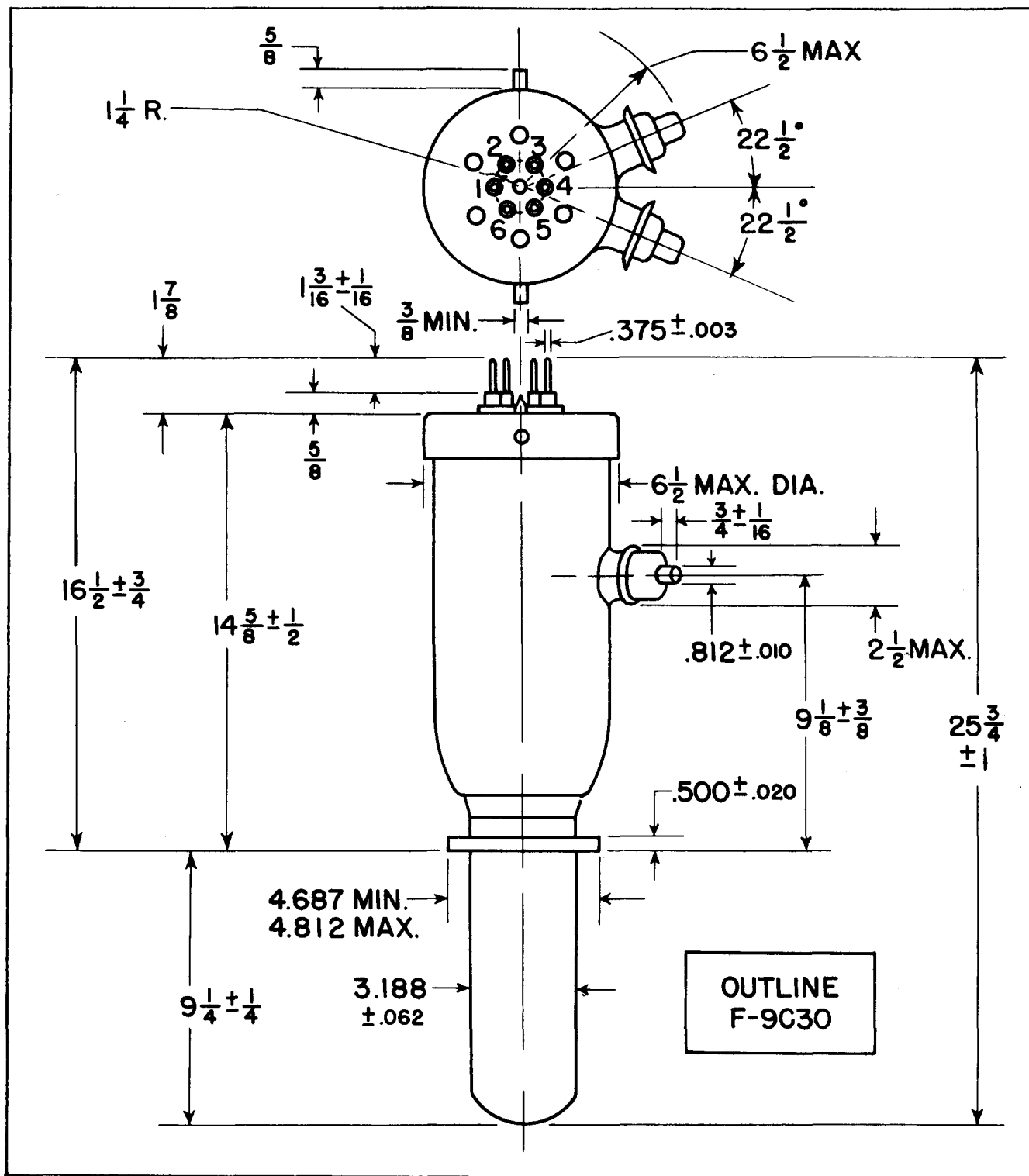


Federal's introduction of high-power tubes with thoriated tungsten filaments marked an epoch of new economies in filament power, and operating efficiencies.

**FEDERAL POWER TRIODE**

**Type F-9C30**

**40 Kilowatts Plate Dissipation**



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Clifton, New Jersey





**When you are developing projects wherein tubes are components, consult Federal's engineers, let them advise and assist you . . . no obligation is incurred.**

**Over the years, hundreds of manufacturers, designers, technicians have taken advantage of this Federal service . . . with benefit both to their products and services.**