

FEDERAL POWER TRIODE

Type F-5666

12.5 Kilowatts Plate Dissipation



GENERAL DATA

DESCRIPTION:

The F-5666 by Federal is a three-electrode tube designed for use as a radio-frequency amplifier, oscillator, or Class B modulator. It is ruggedly constructed to meet the severe conditions of radio-frequency heating service. This special feature contributes to a better performance when the F-5666 is used to replace the Type 889-A. The anode (heavy wall design) is water-cooled, capable of dissipating 12.5 kilowatts. The cathode is a pure tungsten filament. Maximum ratings apply up to 22.5 megacycles. Operation at 50 megacycles is permissible with plate voltage and input reduced to one-half maximum ratings.

Electrical:

► Filament Voltage	11.0 Volts
► Filament Current	120 Amperes
► Filament Starting Current	180 Amperes Max.
► Filament Cold Resistance	.0083 Ohms
► Peak Cathode Current	7.5 Amperes
► Amplification Factor	
$I_b = 1.0$ Amp.;	
$E_c = -100$ Volts	21
► Interelectrode Capacitances	
Grid-Plate	17.5 $\mu\mu\text{f}$
Grid-Filament	23.3 $\mu\mu\text{f}$
Plate-Filament	2.7 $\mu\mu\text{f}$

Mechanical:

► Mounting Position—	
Vertical, Anode Down	
► Type of Cooling—Water	
and Forced Air	
Water Flow on Anode	5 GPM
Maximum Outgoing	
Water Temperature	70° C
Air Flow on Bulb*	30 CFM
Maximum Glass	
Temperature	160° C
► Net Weight,	
Approx.	4 Pounds

*Operation at frequencies above 15 Mc may require air-flow onto the dish center in order to hold the temperature of the seals and dish below 160° C. The blower required should deliver 30 C.F.M. through a 3" nozzle.

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Internal construction based on Federal's advanced designs and techniques makes for longer F-5666 life and finer performance.

Maximum Ratings and Typical Operating Conditions

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum Ratings

DC Plate Voltage	10,000 Volts
Maximum Signal DC Plate Current**	2 Amperes
Maximum Signal Plate Input**	16 Kilowatts
Plate Dissipation**	12.5 Kilowatts

Typical Operation

(Unless otherwise specified, values are for two tubes)

DC Plate Voltage	7,500 Volts
DC Grid Voltage	—300 Volts
Peak A-F Grid to Grid Voltage	1,700 Volts
Zero Signal DC Plate Current	0.4 Ampere
Maximum Signal DC Plate Current	3.2 Amperes
Effective Load Resistance, Plate to Plate	5,000 Ohms
Maximum Signal Driving Power, Approximate	150 Watts
Maximum Signal Power Output, Approximate	15 Kilowatts

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

RADIO-FREQUENCY POWER AMPLIFIER —CLASS B TELEPHONY

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

Maximum Ratings

DC Plate Voltage	10,000 Volts
DC Plate Current	1.0 Ampere
Plate Input	10 Kilowatts
Plate Dissipation	12.5 Kilowatts

Typical Operation

DC Plate Voltage	9,000 Volts
DC Grid Voltage	—350 Volts
Peak R-F Grid Voltage	450 Volts
DC Plate Current	0.8 Ampere
Driving Power, Approximate†	110 Watts
Power Output, Approximate	2.5 Kilowatts

†At crest of a-f 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

DC Plate Voltage	8,000 Volts
DC Grid Voltage	—1,500 Volts
DC Plate Current	1.0 Ampere
DC Grid Current	0.35 Ampere
Plate Input	8 Kilowatts
Plate Dissipation	7.5 Kilowatts

Typical Operation

DC Plate Voltage	6,000	7,500 Volts
DC Grid Voltage	—900	—1,200 Volts
Peak R-F Grid Voltage	1,420	1,700 Volts
DC Plate Current	1.0	.88 Ampere
DC Grid Current, approx.	0.1	.08 Ampere
Driving Power, approx.	140	140 Watts
Power Output, approx.	4	5 Kilowatts

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—CLASS C TELEGRAPHY

(Key-down conditions per tube without modulation)*

Maximum Ratings

DC Plate Voltage	10,000 Volts
DC Grid Voltage	—1,500 Volts
DC Plate Current	2 Amperes
DC Grid Current	0.35 Ampere
Plate Input	20 Kilowatts
Plate Dissipation	12.5 Kilowatts

Typical Operation

DC Plate Voltage	6,000	7,500	9,000 Volts
Filament Voltage	10.6	10.7	10.8 Volts
DC Grid Voltage	—500	—600	—750 Volts
Peak R-F Grid Voltage	1,200	1,400	1,700 Volts
DC Plate Current	1.6	1.8	2.0 Amps.
DC Grid Current, approx.	.19	.20	.21 Amps.
Driving Power, approx.	220	270	340 Watts
Power Output, approx.	6.3	8.9	12.2 K.W.

*Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

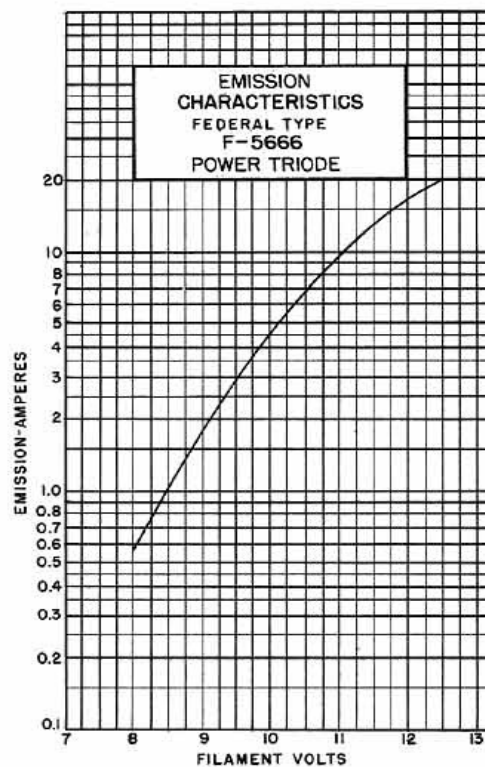
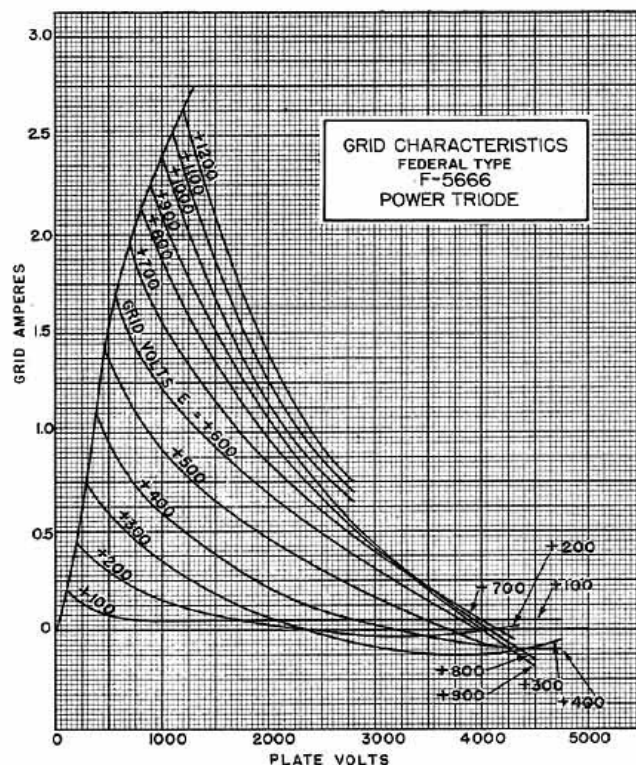
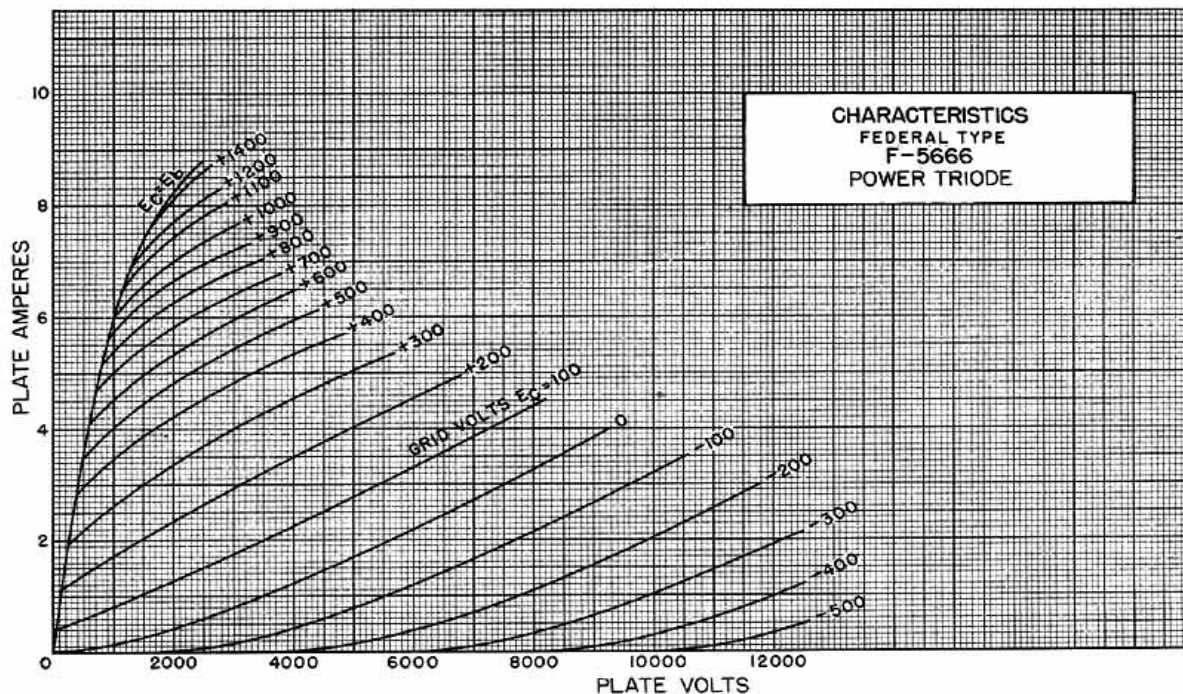


Federal's F-5666 is a "must" for equipment manufacturers who have an eye for both new design and new operating economies.

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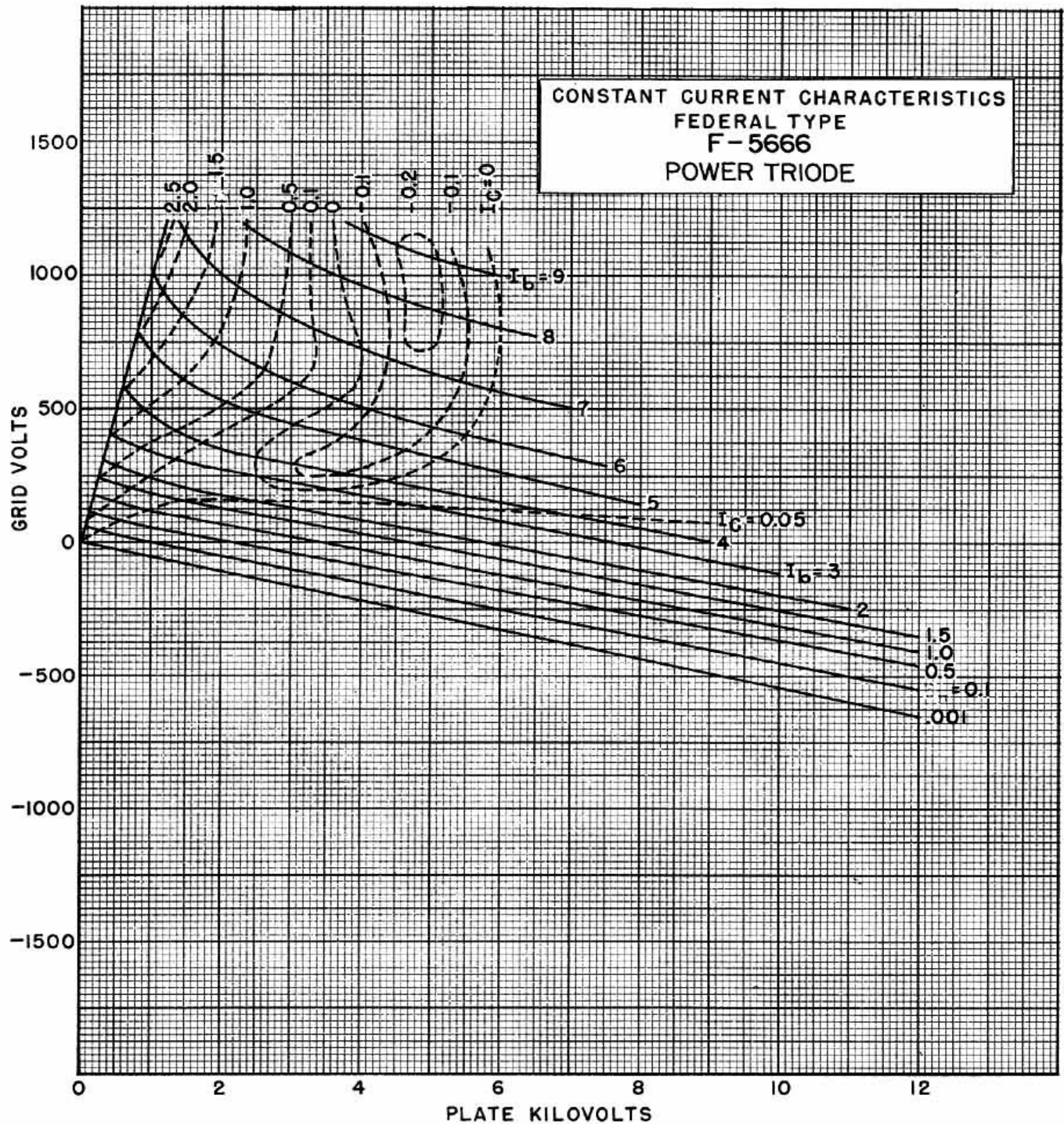
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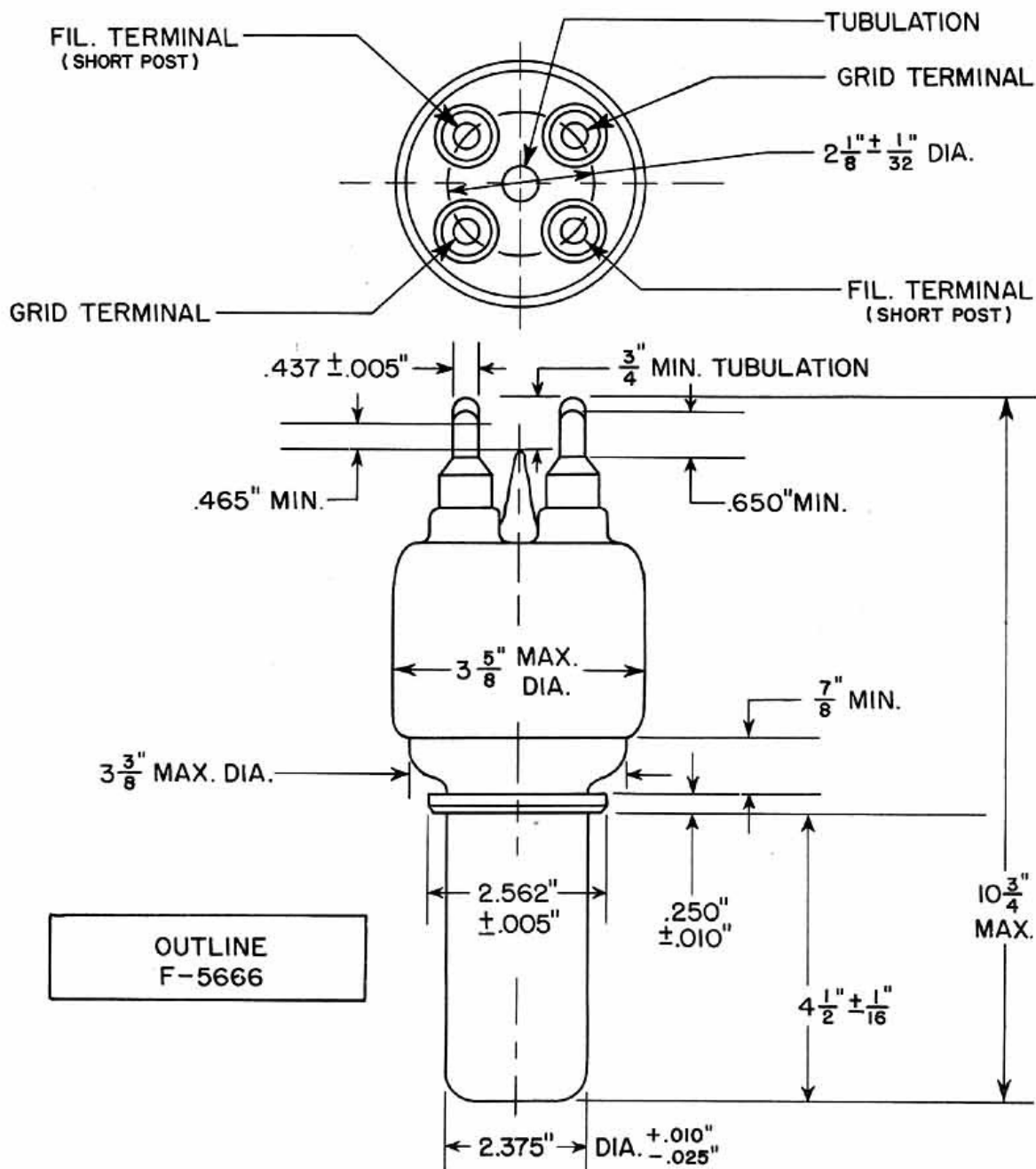
Federal's F-5666 has the rugged design and structure indispensable to trouble-free operation in induction and dielectric applications.



The long life qualities of F-5666 are not accidental "by-products", but the result of Federal's objective research and development work.

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