

FEDERAL POWER TRIODE

Type F-5680

2.5 Kilowatts Plate Dissipation



GENERAL DATA

DESCRIPTION:

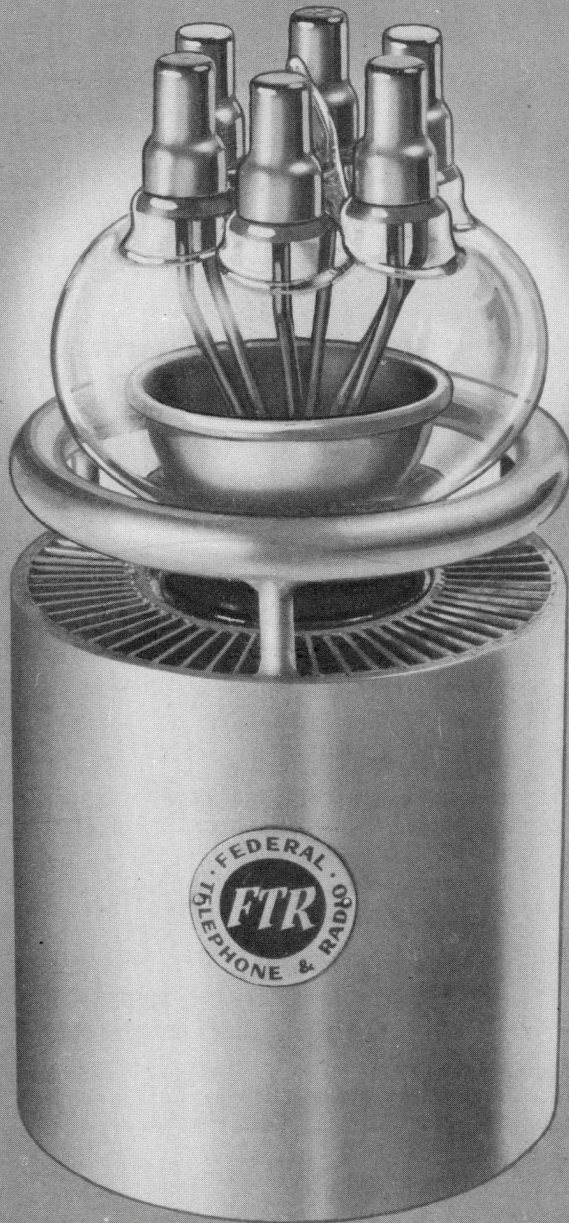
Federal's Type F-5680 is a three-electrode tube designed for use as a modulator, amplifier and oscillator. The relatively wide spacing between the elements, and the lack of internal insulators make this type tube especially suitable for high voltage pulse applications. The anode is air-cooled, capable of dissipating 2.5 kilowatts. The cathode is a thoriated tungsten filament. Maximum ratings apply up to 30 megacycles. Operation up to 50 megacycles is permissible at reduced ratings.

Electrical:

▶ Filament Voltage	13.0 Volts
▶ Filament Current	36 Amperes
▶ Filament Starting Current	72 Amperes
▶ Filament Cold Resistance	.040 Ohms
▶ Amplification Factor, $E_c = -200 V, I_b = 0.2A$	25
▶ Interelectrode Capacitances	
Grid-Plate	12.0 <i>uf</i>
Grid-Filament	15.0 <i>uf</i>
Plate-Filament	1.8 <i>uf</i>

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)	2.5 2.0 1.5
Air Flow—Cubic	
Feet Per Min.	150 120 90
Pressure—Inches	
Water	2.5 1.6 0.9
Maximum Glass	
Temperature	150° C
▶ Net Weight,	
Approximate	5 1/4 Pounds



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Maximum Ratings vs. Operating Frequency

Frequency	30	50	Megacycles
Percentage of Maximum Rated Plate Voltage and Plate Input			
Class C—Telegraphy	100	75	Per Cent

Maximum Ratings and Typical Operating Conditions

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum Ratings, Absolute Values

DC Plate Voltage	6,000	Volts
Maximum Signal DC Plate Current*	2.0	Amperes
Maximum Signal Plate Input*	6.0	Kilowatts
Plate Dissipation*	2.5	Kilowatts

Typical Operation

(Unless otherwise specified, values are for two tubes)

DC Plate Voltage	5,000	Volts
DC Grid Voltage	-150	Volts
Peak A-F Grid-to-Grid Voltage	1,260	Volts
Zero Signal DC Plate Current	0.4	Amperes
Maximum Signal DC Plate Current	2.25	Amperes
Effective Load Resistance, Plate to Plate	4,000	Ohms
Maximum Signal Driving Power, Approximate	175	Watts
Maximum Signal Power Output, Approximate	7.2	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	6,000	Volts
DC Plate Current	1.5	Amperes
Plate Input	3.75	Kilowatts
Plate Dissipation	2.5	Kilowatts

Typical Operation

DC Plate Voltage	6,000	Volts
DC Grid Voltage	-160	Volts
Peak R-F Grid Voltage	300	Volts
DC Plate Current	0.56	Amperes
DC Grid Current, Approximate	0.0	Amperes
Driving Power, Approximate**	47	Watts
Power Output, Approximate	1	Kilowatt

**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	5,000	Volts
DC Grid Voltage	-2,000	Volts
DC Plate Current	1.5	Amperes
DC Grid Current	0.2	Amperes
Plate Input	7.5	Kilowatts
Plate Dissipation	1.6	Kilowatts

Typical Operation

DC Plate Voltage	5,000	Volts
DC Grid Voltage	-800	Volts
Peak R-F Grid Voltage	1,370	Volts
DC Plate Current	0.74	Amperes
DC Grid Current, Approximate	0.10	Amperes
Driving Power, Approximate	130	Watts
Power Output, Approximate	2.7	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	6,000	Volts
DC Grid Voltage	-2,000	Volts
DC Plate Current	2.0	Amperes
DC Grid Current	0.2	Amperes
Plate Input	12	Kilowatts
Plate Dissipation	2.5	Kilowatts

Typical Operation

DC Plate Voltage	6,000	Volts
DC Grid Voltage	-800	Volts
Peak R-F Grid Voltage	1,510	Volts
DC Plate Current	1.4	Amperes
DC Grid Current, Approximate	0.16	Amperes
Driving Power, Approximate	225	Watts
Power Output, Approximate	6	Kilowatts

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

RADIO FREQUENCY POWER AMPLIFIER AND OSCILLATOR—PULSED OPERATION

Maximum Ratings, Absolute Values

DC Plate Voltage	17,500	Volts
DC Grid Voltage	-5,000	Volts
Peak Cathode Current	35	Amperes
Plate Dissipation‡	1.2	Kilowatts
Duty Cycle	.030	

‡Air Flow=75 CFM

Typical Operation

DC Plate Voltage	15,500	Volts
DC Grid Voltage (during pulse)	-750	Volts
DC Plate Current	0.20	Amperes
DC Grid Current	.013	Amperes
Duty Cycle	.023	
Peak Power Output	90	Kilowatts