

FEDERAL POWER TRIODE

Type F-862-A

100 Kilowatts Plate Dissipation



GENERAL DATA

DESCRIPTION:

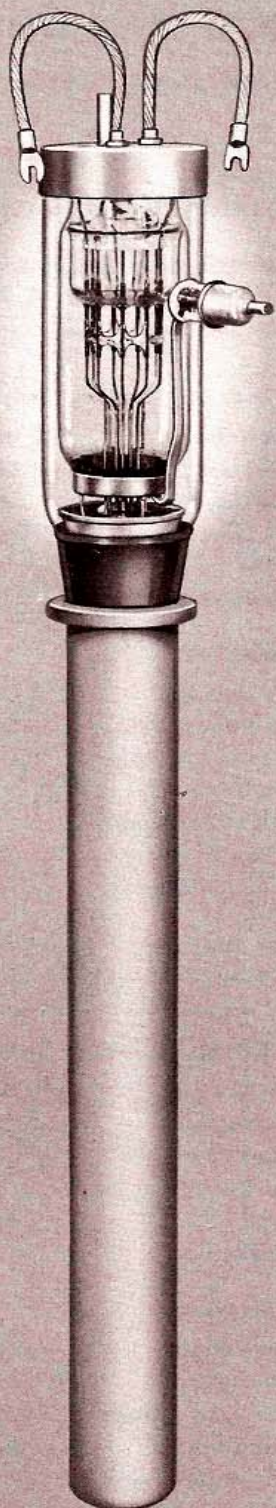
Federal's F-862-A is a three-electrode tube engineered for use as a radio-frequency amplifier, oscillator, or as a Class B modulator. The water-cooled anode is capable of dissipating 100 kilowatts. The cathode is a pure tungsten filament. Maximum ratings apply up to 1.6 megacycles.

Electrical:

- ▶ Filament Voltage 33 Volts
- ▶ Filament Current 207 Amperes
- ▶ Filament Starting Current 400 Amperes max.
- ▶ Filament Cold Resistance .014 Ohms
- ▶ Amplification Factor, at
 - $I_b = 3 \text{ amps.}$
 - $E_c = -100 \text{ volts}$ 45
- ▶ Interelectrode Capacitances
 - Grid-Plate 64 $\mu\mu\text{f}$
 - Grid-Filament 56 $\mu\mu\text{f}$
 - Plate-Filament 4.7 $\mu\mu\text{f}$

Mechanical:

- ▶ Mounting Position—
 - Vertical, anode down
- ▶ Type of Cooling—
 - Water and Forced Air
 - Minimum Water Flow on Anode 20 GPM
 - Maximum Outgoing Water
 - Temperature 70° C
 - Air Flow (to bulb and seals) 15 CFM
 - Maximum Glass Temperature 150° C
- ▶ Net Weight, approximate 37 Pounds



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In all parts of the U. S. A. Federal's F-862-A is giving an excellent account of itself in 50 kilowatt, low level modulated transmitters.

Maximum Ratings and Typical Operating Conditions

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum Ratings, Absolute Values

DC Plate Voltage	15,000 Volts
Max. Signal DC Plate Current†	7.5 Amperes
Max. Signal Plate Input†	100 Kilowatts
Plate Dissipation†	50 Kilowatts

Typical Operation

(Unless otherwise specified, values are for two tubes)

DC Plate Voltage	12,000 Volts
DC Grid Voltage	0 Volts
Peak A-F Grid-to-Grid Voltage	2,000 Volts
Zero Signal DC Plate Current	3 Amperes
Max. Signal DC Plate Current	13 Amperes
Effective Load Resistance (plate to plate)	1,800 Ohms
Max. Signal Driving Power, approx.	450 Watts
Max. Signal Power Output, approx.	90 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	20,000 Volts
DC Plate Current	5.0 Amperes
Plate Input	100 Kilowatts
Plate Dissipation	75 Kilowatts

Typical Operation

DC Plate Voltage	18,000 Volts
DC Grid Voltage	—200 Volts
Peak R-F Grid Voltage	750 Volts
DC Plate Current	4.2 Amperes
Driving Power, approx.‡	1.1 Kilowatts
Power Output, approx.	25 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	5.0 Amperes
DC Grid Current	1.25 Amperes
Plate Input	60 Kilowatts
Plate Dissipation	50 Kilowatts

Typical Operation

DC Plate Voltage	12,000 Volts
DC Grid Voltage	—800 Volts
Peak R-F Grid Voltage	2,000 Volts
DC Plate Current	5 Amperes
DC Grid Current, approx.	1 Ampere
Driving Power, approx.	2 Kilowatts
Power Output, approx.	45 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	20,000 Volts
DC Grid Voltage	—3,000 Volts
DC Plate Current	10 Amperes
DC Grid Current	1.0 Ampere
Plate Input	200 Kilowatts
Plate Dissipation	100 Kilowatts

Typical Operation

DC Plate Voltage	18,000 Volts
DC Grid Voltage	—1,000 Volts
Peak R-F Grid Voltage	2,550 Volts
DC Plate Current	8.33 Amperes
DC Grid Current, approx.	0.9 Amperes
Driving Power, approx.	2.4 Kilowatts
Power Output, approx.	100 Kilowatts

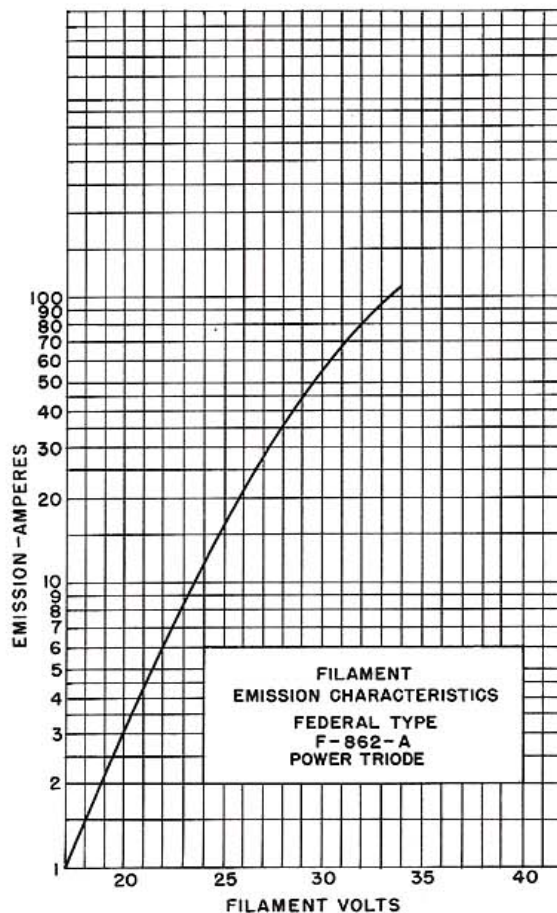
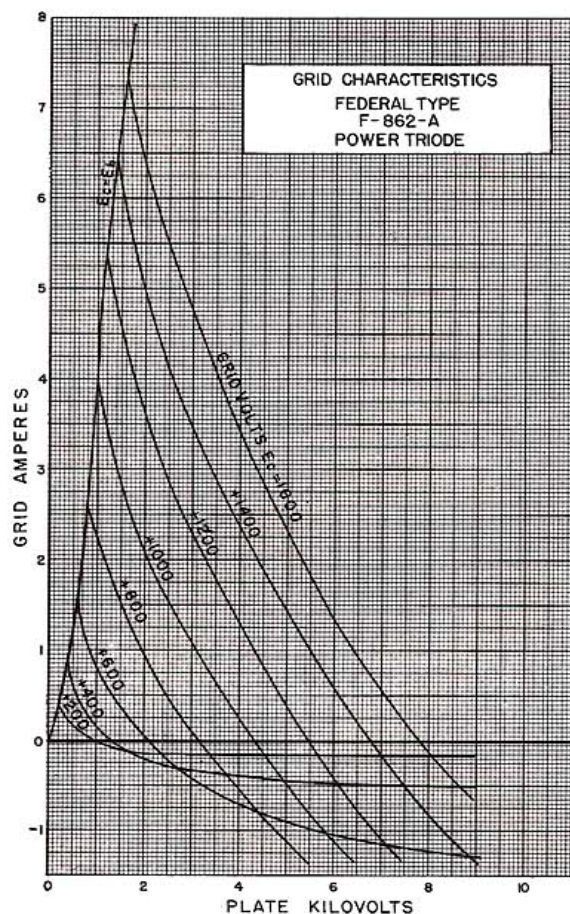
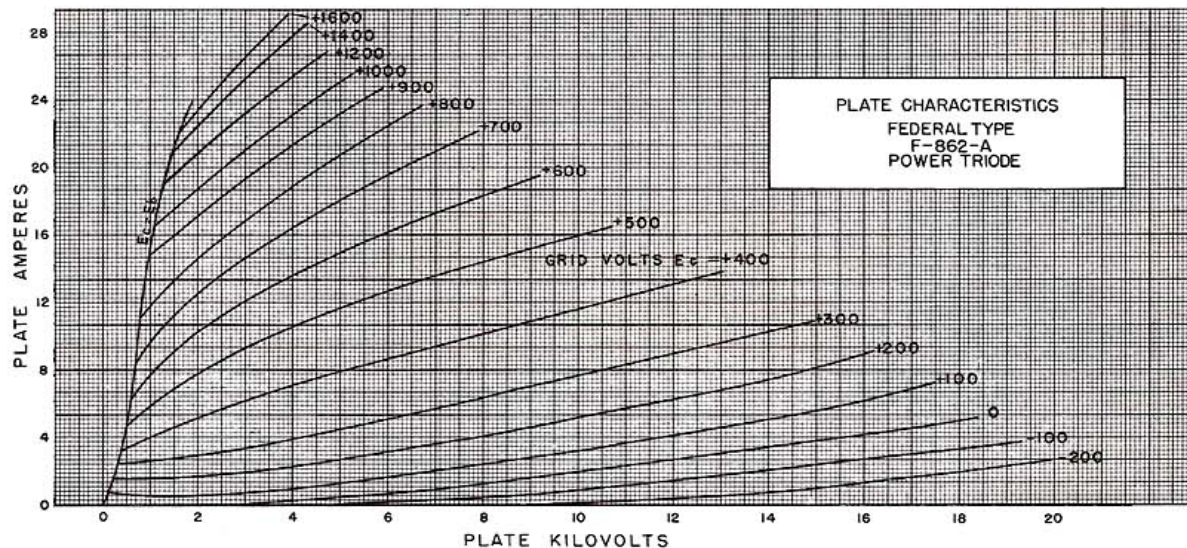
¶Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of carrier conditions.

It's the internal construction of the F-862-A and F-898-A which contributes to the smoother performance of these Federal tubes in 50 kilowatt Doherty amplifiers.

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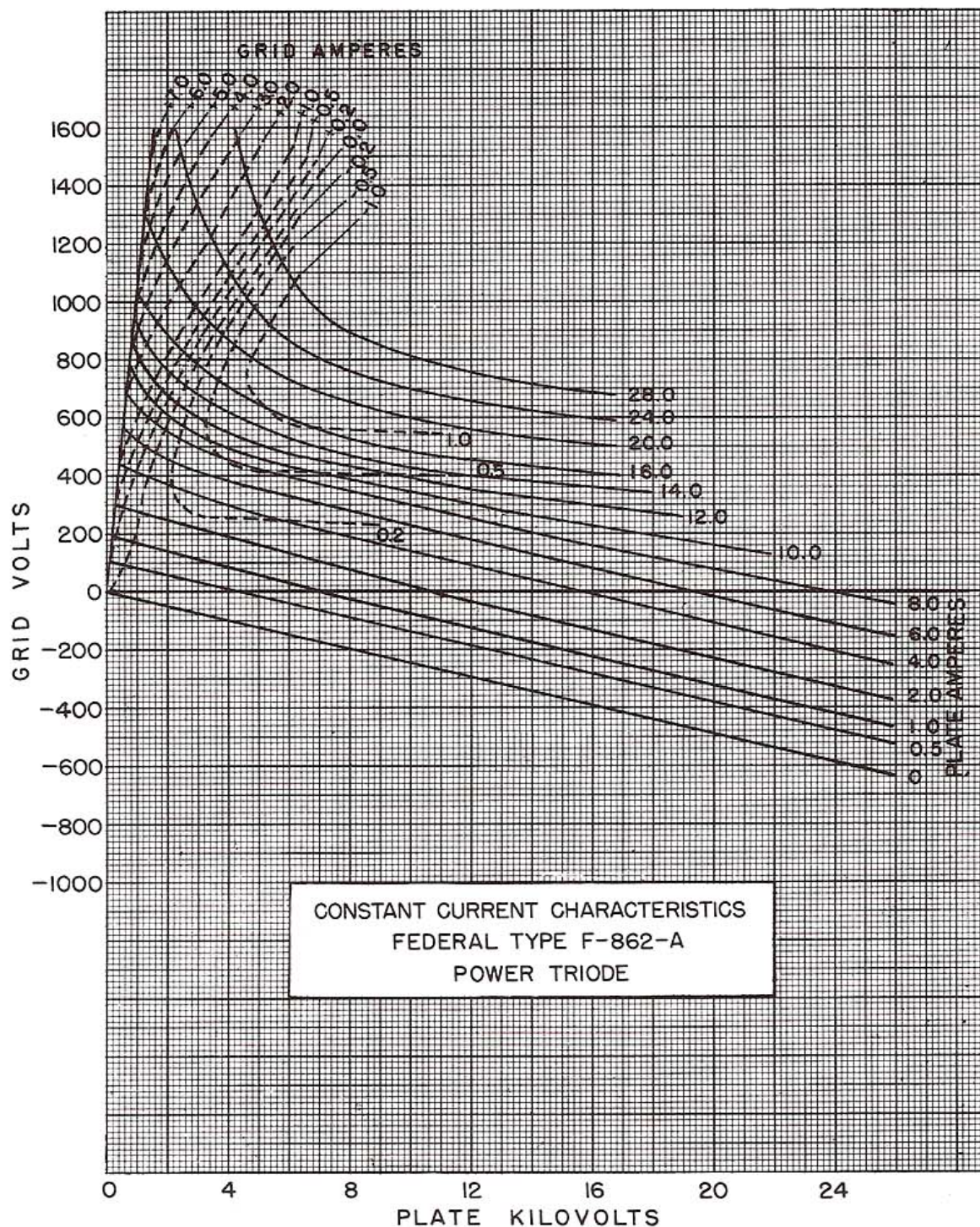


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Federal tubes are precision-designed to meet the specific needs of communications and industrial applications . . . are produced under the most rigid standards of quality-control.



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