

ELECTRON TUBE DIVISION
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F-7482

POWER TRIODE

DESCRIPTION

The F-7482 is a general purpose metal and ceramic, vapor-cooled, triode for use as an amplifier, oscillator or Class B modulator under CW or pulsed conditions. The cathode is a thoriated tungsten filament. The anode is capable of dissipating 200 kilowatts under continuous commercial service. Additional dissipation capacity is available under pulse or intermittent service. Cooling is accomplished by evaporation of water on the anode and forced air on the envelope and seals. Maximum CW ratings apply up to 30 mc. Derated conditions apply at frequencies up to 110 mc.

GENERAL CHARACTERISTICS

Electrical

Filament Voltage	14.5	Volts
Filament Current	450	Amperes
Filament Starting Current, max.	1200	Amperes
Filament Cold Resistance	.0035	Ohms
Amplification Factor	45	
Inter-electrode Capacitance		
Grid-Plate	75	pF
Grid-Filament	200	pF
Plate-Filament	4.0	pF

Mechanical

Mounting Position	Vertical, anode down
Type of Cooling	Water & Forced Air
Air Flow on Bulb & Seals, approx.*	500 cfm
Max. Ceramic Temperature	165 °C
Net Weight, approx.	175 lbs.

* At frequencies up to 15 mc., air flow should be directed primarily on filament seals and the main ceramic bulb; at higher frequencies or high ambient temperatures, additional air flow may be required on the grid seals. Air flow should be distributed to maintain uniform temperature, not greater than 165°, around the circumference of the seals.

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MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

Audio-Frequency Power Amplifier & Modulator— Class B

Maximum Ratings, Absolute Values

D-C Plate Voltage	20 Kilovolts
Max. Signal D-C Plate Current □	30 Amperes
Max. Signal Plate Input □	600 Kilowatts
Plate Dissipation □	200 Kilowatts

Typical Operation (Values are for two tubes)

D-C Plate Voltage	12.0	15.0 Kilovolts
D-C Grid Voltage	—250	—320 Volts
Peak A-F Grid-to-Grid Voltage	960	1,740 Volts
Peak A-F Plate-to-Plate Voltage	20.4	25.2 Kilovolts
Zero Signal D-C Plate Current	2.0	2.0 Amperes
Max. Signal D-C Plate Current	20.0	56.0 Amperes
Effective Load Resistance, Plate-to-Plate	1,300	570 Ohms
Max. Signal Driving Power, approx.	0.8	5.0 Kilowatts
Max. Signal Power Output, approx.	160	550 Kilowatts

Linear R-F Power Amplifier— Class AB

(Single-Sideband Suppressed-Carrier
Service)

Maximum Ratings, Absolute Values

D-C Plate Voltage	20.0 Kilovolts
Grid Dissipation	2.5 Kilowatts
Plate Dissipation	200 Kilowatts

Typical Operation—Cathode Drive

	2-Tone	16-Tone
D-C Plate Voltage	20.0	20.0 Kilovolts
D-C Grid Voltage	—450	—450 Volts
Zero Signal D-C Plate Current	1.0	1.0 Amperes
Max. Signal Peak Plate Current	54	135 Amperes
Max. Signal Peak R-F Grid Voltage	690	1,100 Volts
Max. Signal Peak Driving Power	10	40 Kilowatts
Peak Envelope Power Output ○	230	580 Kilowatts
Average Power Output, approx.	115	58 Kilowatts

Radio-Frequency Power Amplifier—Class B

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

Maximum Ratings, Absolute Values

D-C Plate Voltage	20 Kilovolts
D-C Plate Current	20 Amperes
Plate Input	262 Kilowatts

Typical Operation

D-C Plate Voltage	17.5 Kilovolts
D-C Grid Voltage	—350 Volts
Peak R-F Grid Voltage	450 Volts
D-C Plate Current	12.4 Amperes
Peak R-F Plate Voltage	7,500 Volts
D-C Grid Current	0 Amperes
R-F Load Resistance	400 Ohms
Driving Power, approx.*	1,350 Watts
Power Output, approx.	75 Kilowatts

Plate-Modulated R-F Power Amplifier—Class C Telephony

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

Maximum Ratings, Absolute Values

D-C Plate Voltage	15.0 Kilovolts
D-C Grid Voltage	—1.5 Kilovolts
D-C Plate Current	20 Amperes
D-C Grid Current	4.0 Amperes
Plate Input	300 Kilowatts
Plate Dissipation	130 Kilowatts

Typical Operation

	Cathode Drive	
D-C Plate Voltage	12.0	14.0 Kilovolts
D-C Grid Voltage	—800	—1,000 Volts
Peak R-F Grid Voltage	1,350	1,630 Volts
Peak R-F Plate Voltage	10.6	11.8 Kilovolts
D-C Plate Current	13.5	20.5 Amperes
D-C Grid Current	3.5	3.5 Amperes
R-F Load Resistance	490	120 Ohms
Driving Power, approx.	20	5.7 Kilowatts
Power Output, approx.	145 ○	220 Kilowatts

R-F Power Amplifier & Oscillator—Class C Telegraphy

(Key down conditions per tube without amplitude modulation†)

Maximum Ratings, Absolute Values

D-C Plate Voltage	20.0 Kilovolts
D-C Grid Voltage	—1.5 Kilovolts
D-C Plate Current	35 Amperes
D-C Grid Current	4.0 Amperes
Plate Input	600 Kilowatts
Plate Dissipation	200 Kilowatts

Typical Operation

D-C Plate Voltage	14.0	20.0 Kilovolts
D-C Grid Voltage	—600	—1,000 Volts
Peak R-F Grid Voltage	1,200	1,680 Volts
Peak R-F Plate Voltage	12.0	17.4 Kilovolts
D-C Plate Current	25	29 Amperes
D-C Grid Current	3.6	3.4 Amperes
R-F Load Resistance	250	330 Ohms
Driving Power, approx.	4.5	6.0 Kilowatts
Power Output, approx.	260	440 Kilowatts

RATINGS VERSUS FREQUENCY

Maximum ratings apply up to 30 mc except as noted. The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced according to the tabulation below. (Other maximum ratings are the same as specified.) Special attention should be given to adequate ventilation of the ceramics and seals at these frequencies.

Frequency	30	70	110	Megacycles
Percentage of Maximum Rated Pulse Voltage and Plate Input	100	80	60	Per Cent

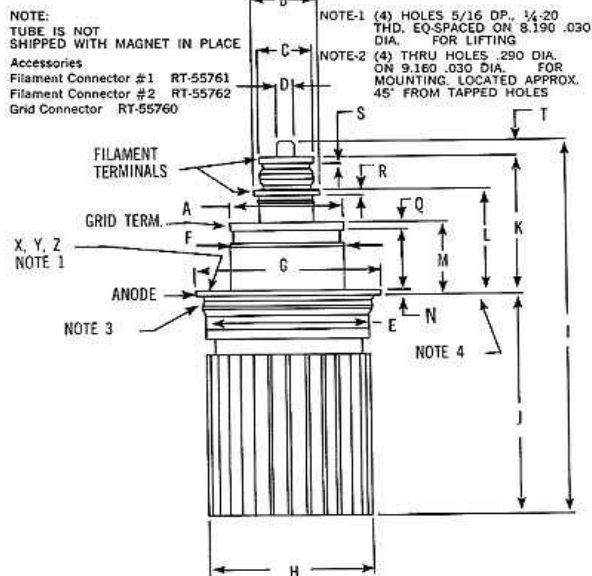
Warning: Operation of this tube may produce X-rays. Adequate shielding must therefore be provided in the equipment.

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

○ Includes power transferred from driver stage.

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

**At crest of audio-frequency cycle with modulation factor of 1.

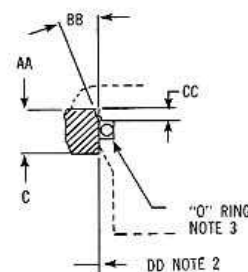


NOTES

- Eight holes, 1/4-20 tap, (x) deep, on circle diameter (y), spaced at chordal distances (z). For lifting tube.
- Recommended diameter of opening for tube in cooling jacket.
- O ring, supplied with tube.

Ref.	Min.	Nom.	Max.	Note
A	6.907	6.938	6.939	
B	3.969	4.000	4.031	
C	3.282	3.313	3.344	
D	—	1.12	1.25	
E	—	10.00	10.13	
F	—	—	7.38	
G	11.25	11.31	11.37	
H	—	9.00	10.13	
I	—	—	26.3	
J	14.00	14.25	14.50	
K	9.45	9.75	10.05	
L	7.34	7.56	7.78	
M	5.37	5.56	5.75	
N	.344	.375	—	
Q	.500	.563	—	
R	.313	.375	—	
S	.313	.375	—	
T	—	—	1.75	
X	.44	.50	—	1
Y	9.60	9.63	9.66	1
Z	3.65	3.68	3.71	1
AA	—	.75	—	
BB	—	.20	—	
CC	—	.19	—	
DD	10.498	10.503	10.508	2

DETAIL OF RECOMMENDED OPENING IN COOLING JACKET



Accessories (Note 6)

Small Filament Connector	RT-55762
Large Filament Connector	RT-55761
Grid Connector	RT-55760
O Ring	RT-53836

- Tube to be supported in equipment only by this surface.
- All dimensions in inches.
- Additional information on accessories will be supplied on request.

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