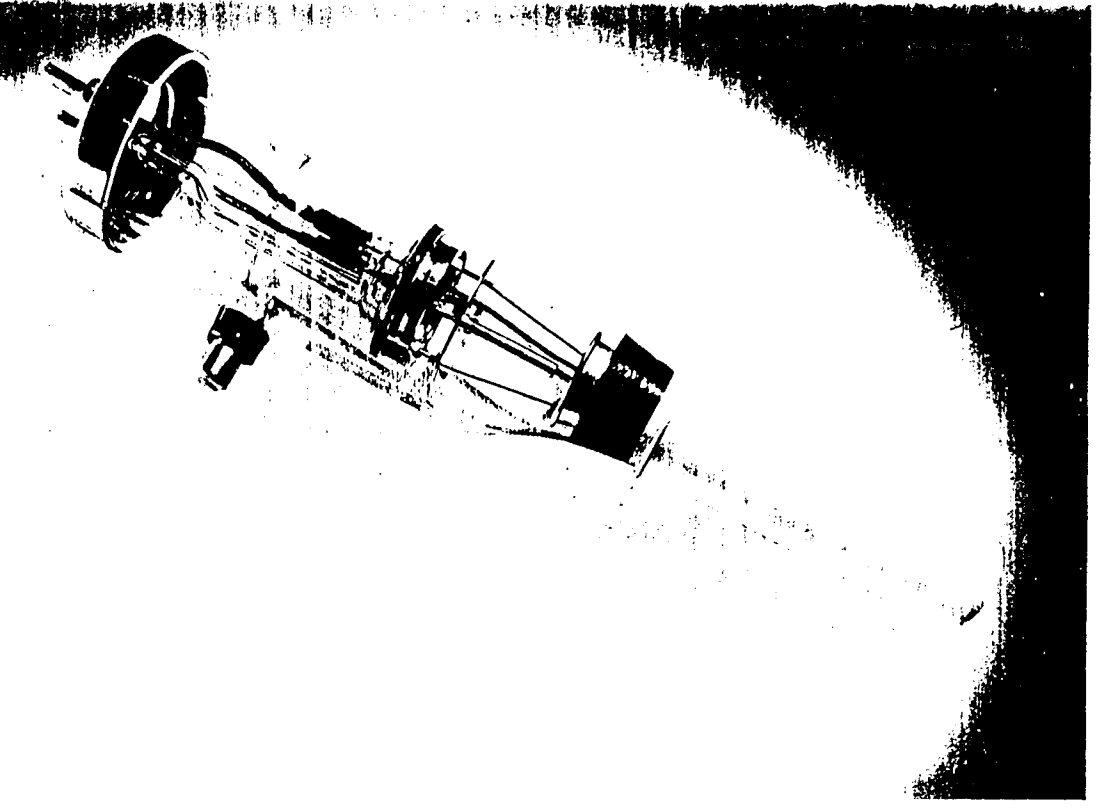


MACHLETT

ML-342A

DESCRIPTION AND RATINGS

DESCRIPTION

The ML-342A is a three-electrode tube designed for use as a modulator, amplifier, or oscillator in radio-transmitting service. The cathode is a pure-tungsten filament. The anode is water cooled and is capable of dissipating 25 kW. Maximum ratings of 20 kVdc and 2.5 amperes apply at frequencies up to 4 Mc; operation at 16 Mc is permissible with plate voltage reduced to 10 kVdc.

The ML-342A embodies all the techniques and skills that have been inherently a part of Machlett Laboratories, Inc., since 1897. All parts are thoroughly processed by special Machlett techniques, which prevent contamination and assure complete and permanent outgassing. The tube is exhausted by a straight-line, high-voltage process assuring the same high standards as characterize the Machlett line of high- and super-voltage x-ray tubes.

GENERAL CHARACTERISTICS

Electrical

Filament Voltage	20 volts
Filament Current at 20 volts	67 amperes
Filament Starting Current	100 amperes
Amplification Factor	40
Grid-Plate Transconductance	6820 uMhos
Interelectrode Capacitances	
Grid-Plate	27 uuf
Grid-Filament	19 uuf
Plate-Filament	2.5 uuf

Mechanical

Mounting Position	Vertical, anode down
Type of Cooling	Water
Water Flow on Anode (minimum)	6 gpm
Maximum Outgoing Water Temperature	75 °C
Maximum Water Pressure	80 psi

MAXIMUM RATINGS

Direct Plate Voltage	20,000 volts
Direct Plate Current	2.5 amperes
Plate Dissipation	25,000 watts
Grid Dissipation	400 watts
R-F Grid Current	40 amperes
Frequency	4 megacycles

The above are maximum ratings which do not apply simultaneously but depend on the type of service specified below.

TYPICAL OPERATING CONDITIONS

Class B—Audio Amplifier or Modulator

(for balanced 2 tube circuit)

Direct Plate Voltage	15,000	12,500 volts
Grid Bias	−200	−160 volts
Direct Plate Current per tube		
No Drive	0.40	0.35 ampere
Maximum Drive	1.6	1.6 amperes
Plate Dissipation (per tube)	9,000	7,200 watts
Load Resistance (plate-to-plate)	9,600	7,680 ohms
Load Resistance (per tube)	2,400	1,920 ohms
Approximate Maximum Output—2 tubes	30,000	24,000 watts
Recommended Power for Driving Stage	1,000	1,000 watts

Class B—Radio-Frequency Amplifier

Direct Plate Voltage	18,000	12,500 volts
Direct Plate Current for Carrier Conditions	1.4	1.4 amperes
Grid Bias	−450	−300 volts
Approximate Carrier Watts for use with 100% modulation	8,500	5,800 watts

Class C—Radio-Frequency Oscillator or Power Amplifier—Unmodulated

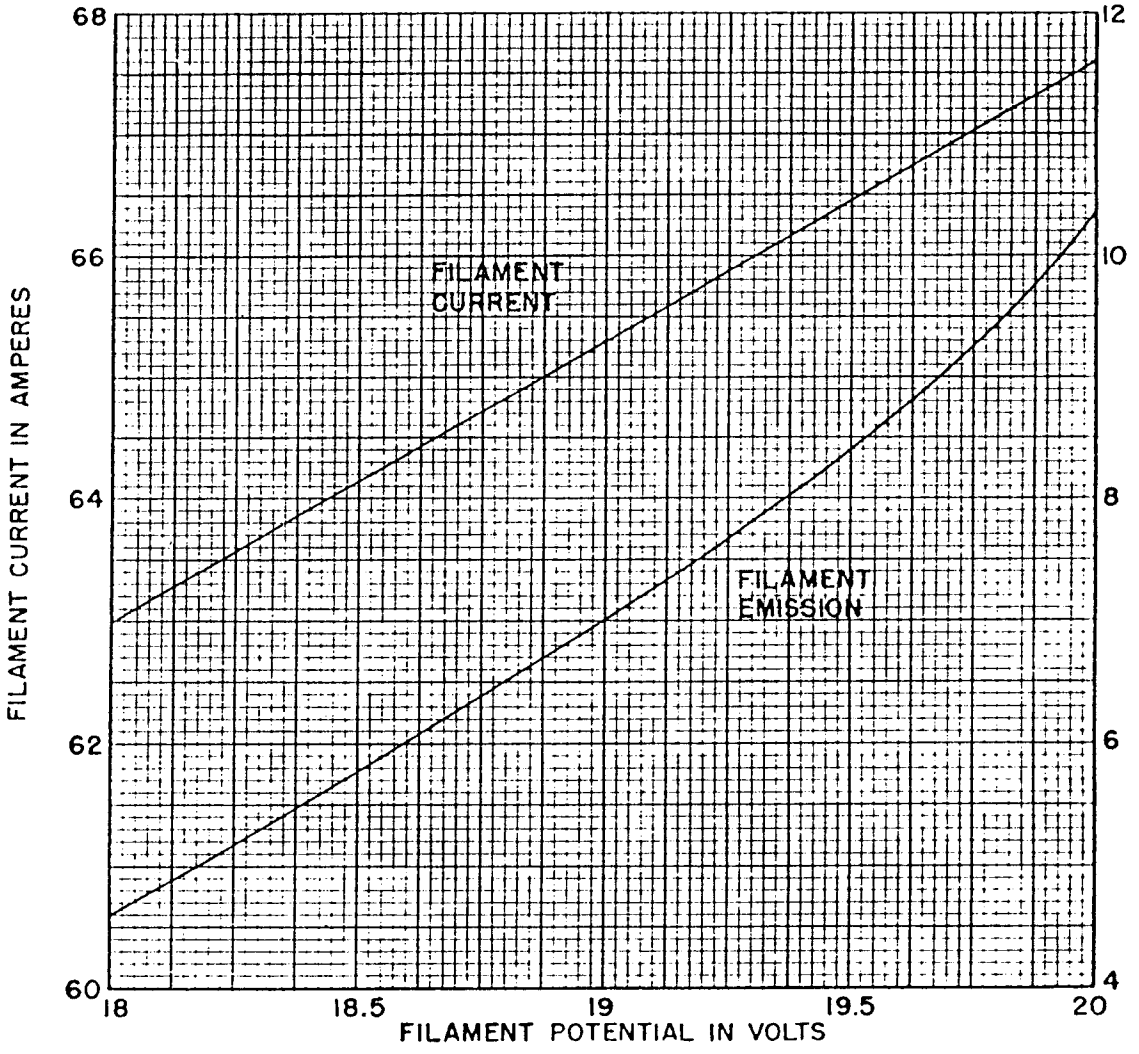
Direct Plate Voltage	18,000	15,000 volts
Direct Plate Current	2.5	2.5 amperes
Grid Bias	−675 to −900	−550 to −750 volts
Nominal Power Output	30,000	25,000 watts

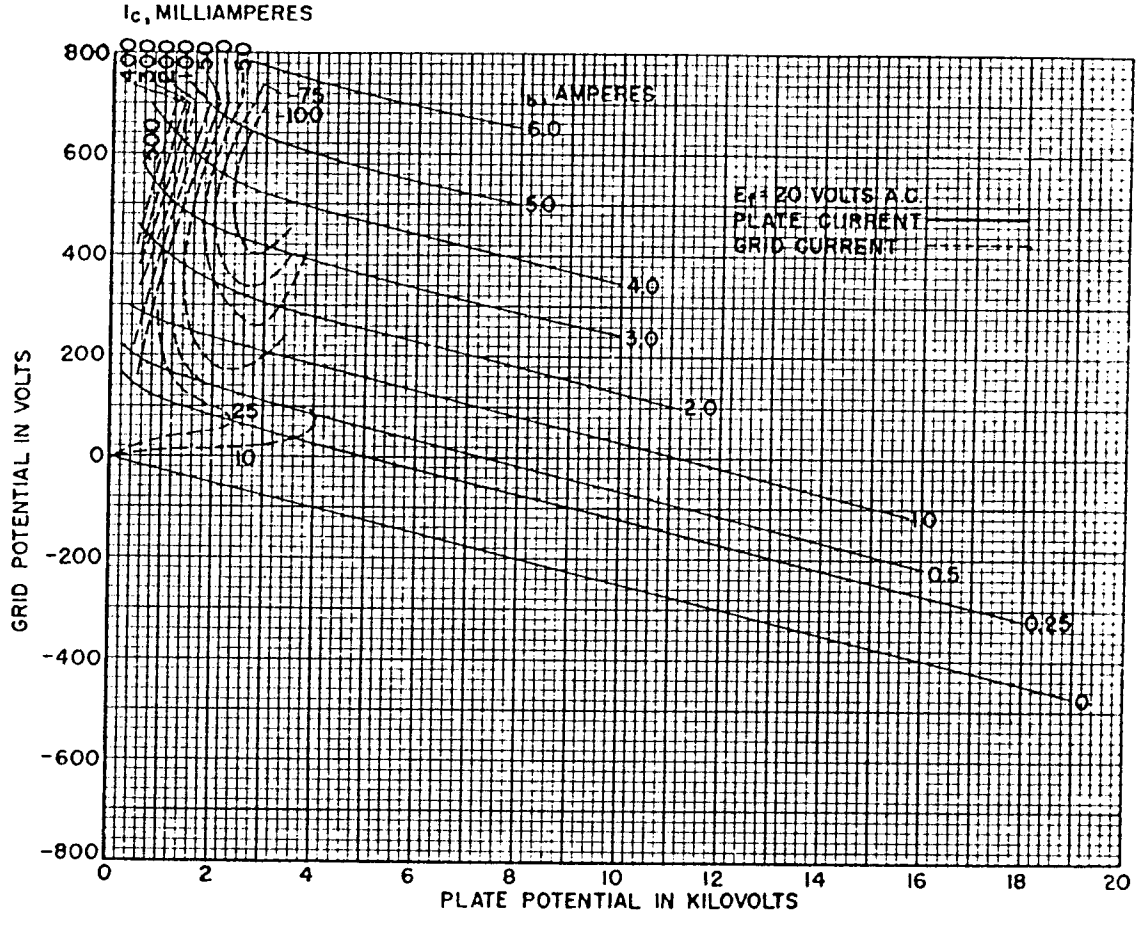
Class C—Radio-Frequency Amplifier—Plate Modulated

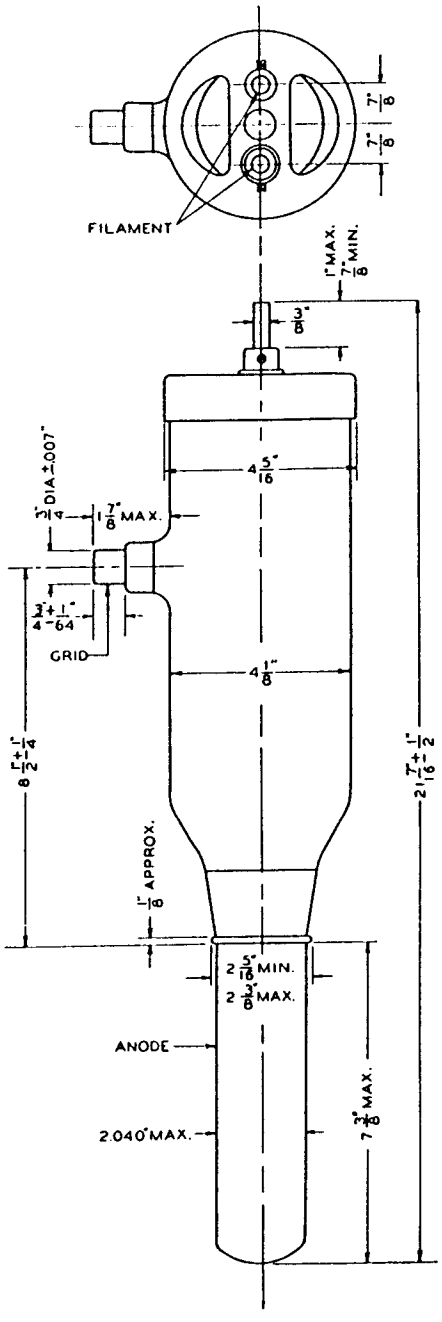
Direct Plate Voltage	12,500	10,000 volts
Direct Plate Current	1.2	1.5 amperes
Grid Bias	−600	−500 volts
Direct Grid Current	250	250 milliamperes
Nominal Carrier Power Output	10,000	10,000 watts

APPLICATION NOTES

Maximum ratings apply at frequencies of 4 megacycles and less. The maximum plate voltage for the upper frequency limit of 16 megacycles is 10,000 volts. The maximum plate voltage for frequencies between 4 and 16 megacycles should be proportionately reduced.


FILAMENT CURRENT IN AMPERES
EMISSION CURRENT IN AMPERES
FILAMENT POTENTIAL IN VOLTS
FILAMENT CURRENT
FILAMENT EMISSION
68
66
64
62
60
12
10
8
6
4
18
18.5
19
19.5
20


I_c, MILLIAMPERES
GRID POTENTIAL IN VOLTS
PLATE POTENTIAL IN KILOVOLTS
I_b AMPERES
6.0
5.0
4.0
3.0
2.0
1.0
0.5
0.25
0
E_f = 20 VOLTS A.C.
PLATE CURRENT
GRID CURRENT
800
600
400
200
0
-200
-400
-600
-800
0
2
4
6
8
10
12
14
16
18
20



DIMENSIONS—ML-342A

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