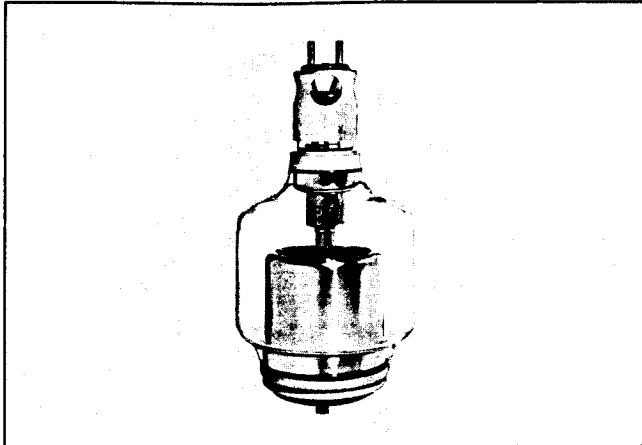




**ML-LPT 44**



**ORDERING NOTES**

Refer to **Machlett** price list. When ordering specify

- tube type
- accessories - oil jacket assembly (optional)  
F-27548

**APPLICATION**

The ML-LPT 44 is a high voltage, high mu triode designed primarily to operate as a switch tube in hard-tube pulse modulators for radar and similar applications. In this service it can deliver pulse output in the order of 1-2 Mw, depending on circuitry and performance requirements.

The ML-LPT 44 is designed for operation in oil or equivalent dielectric fluid, which is required for utilization of the maximum plate voltage ratings. For applications with a resistive load and low energy storage, the tube is rated at 120 kVdc plate voltage. Where the tube is to be used in series with the rf load tube, where high stored energy is involved, or where the frequency of kick-outs must be extremely low, the dc plate voltage should be limited to 100 kV.

**CONSTRUCTION**

The cathode of this tube is a double helix of carburized thoriated-tungsten filament wire, supported at both ends. The re-entrant copper anode is capable of dissipating 2,500 W when cooled by forced oil.

**WARNING**

When operating at peak voltage in excess of 15 kV, this electron tube may give off x-rays which can be harmful unless adequately shielded by the enclosure within which the tube is used. Instructions for protective installation are given in National Bureau of Standards Handbook 93, "Safety Standard for Non-Medical X-Ray and Sealed Gamma Ray Sources." Additional information is available in National Council on Radiation Protection and Measurements Report No. 33, "Medical X-Ray and Gamma Ray Protection for Energies up to 10 MeV." Periodic checks of shielding effectiveness are also required since x-ray radiation levels may increase with the operating life of the tube.

**SPECIFICATION**

**ELECTRICAL CHARACTERISTICS**

<b>Filament Voltage:</b>	12.6 volts
<b>Filament Current:</b>	29 amps
<b>Filament Starting Current, maximum:</b>	120 amps
<b>Filament Cold Resistance:</b>	0.0053 ohm
<b>Amplification Factor:</b>	350
<b>Interelectrode Capacitances:</b>	
Grid Plate:	7.0 pf
Grid Filament:	30 pf
Plate Filament:	0.2 pf

**MECHANICAL CHARACTERISTICS**

<b>Mounting Position:</b>	Vertical, anode down
<b>Insulating Medium:</b>	Oil or equivalent
<b>Type of Cooling:</b>	Forced oil
Oil Flow for 2,500 W	
Plate Dissipation:	10-12 gal/min (38-45 l/min.) †
Maximum Bulk Oil Temperature:	75 °C (167 °F)
Maximum Circulating Oil Temp. for Maximum Dissipation:	75 °C (167 °F)
<b>Maximum Glass Temperature:</b>	165 °C (329 °F)
<b>Net Weight, approximate:</b>	20 lbs. (9.1 kg)

†When using Machlett oil jacket part number F-27548 (order separately)

# MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

## Pulse Modulator or Pulse Amplifier

### Maximum Ratings

DC Plate Voltage .....	120 kV‡
Peak Plate Voltage .....	125 kV‡
DC Grid Voltage .....	-1000 V
Peak Negative Grid Voltage .....	-2500 v
Pulse Cathode Current .....	22 a
Grid Dissipation .....	50 W
Plate Dissipation .....	2500 W
Pulse Duration .....	1000 μs#
Duty Factor .....	.01 #

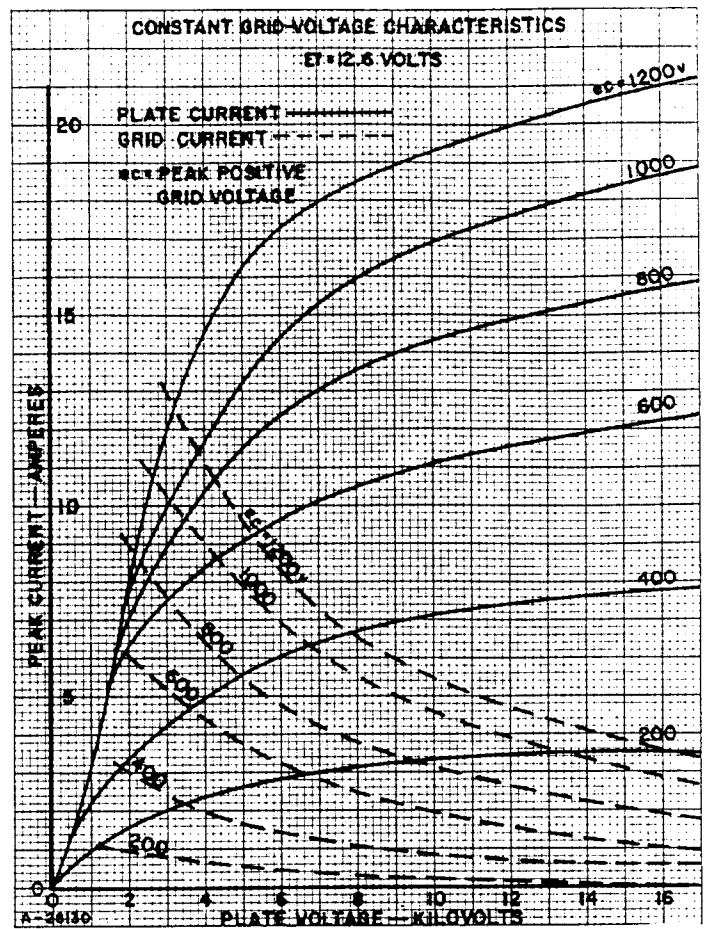
### Typical Operation

DC Plate Voltage .....	100 kV
DC Grid Voltage .....	-400 V
Pulse Positive Grid Voltage .....	800 v
Pulse Plate Current .....	15 a
Pulse Grid Current .....	2.6 a
Pulse Driving Power .....	3.1 kw
Pulse Power Output .....	1.3 Mw
Pulsed Plate Output Voltage .....	88 kv
Duty Factor .....	.005

‡ This voltage may be applied only when the tube is immersed in a suitable dielectric fluid.

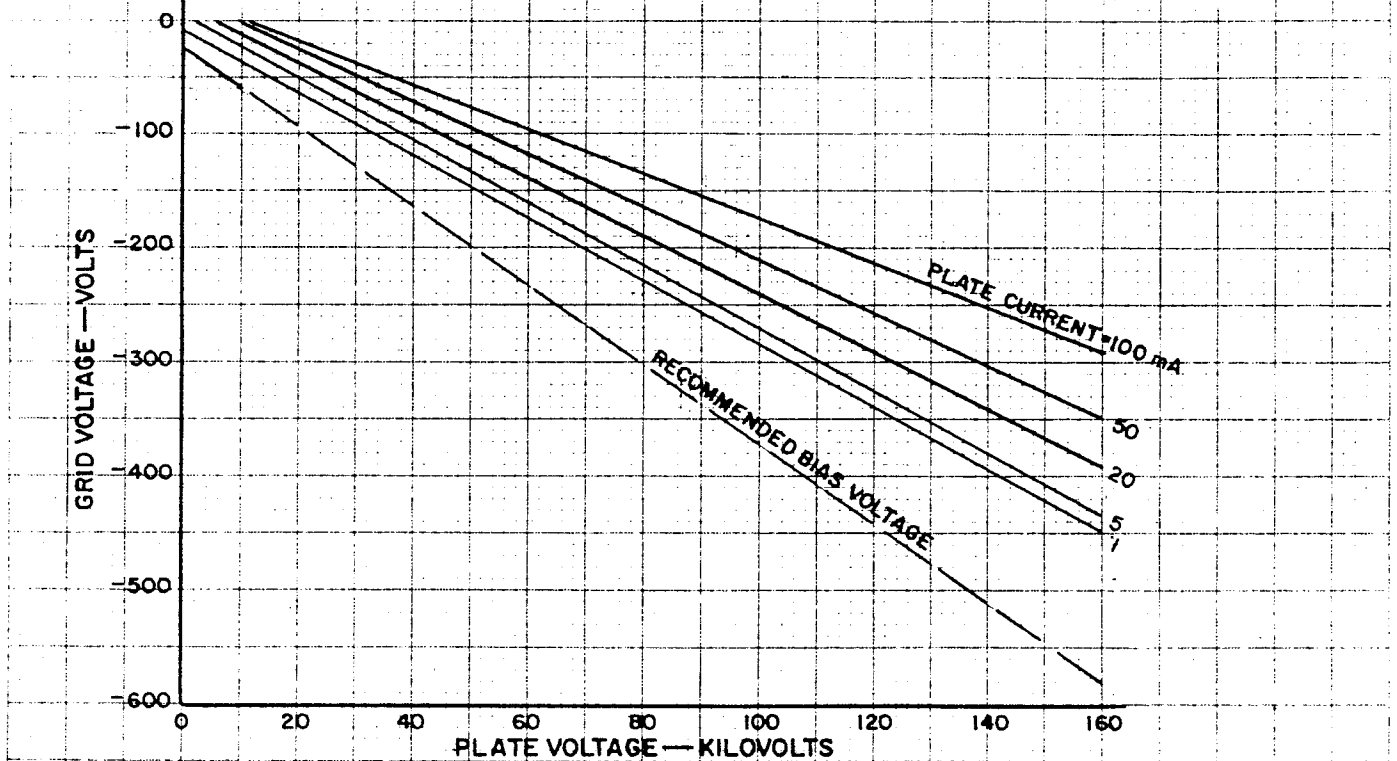
‡‡ With tube immersed in oil and cooled by 10-12 gal/min (38-45 l/min.) oil flow in ML oil jacket F-27548

# For applications requiring longer pulse duration or higher duty factors, consult the Machlett Engineering Department.

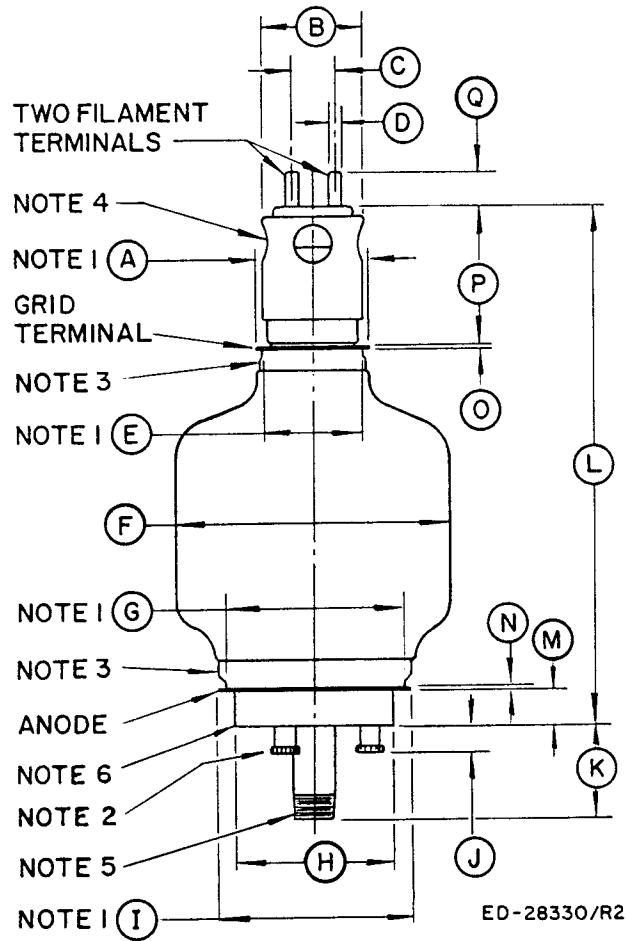


## CONSTANT PLATE-CURRENT CHARACTERISTICS IN NEGATIVE GRID-VOLTAGE REGION

E<sub>f</sub> = 12.6 V



## OUTLINE DATA



### DIMENSIONS FOR OUTLINE OF ML-LPT 44

Ref	Inches (mm)			Notes
	Minimum	Nominal	Maximum	
A	3.16 ( 80.3 )	3.19 ( 81.0 )	3.21 ( 81.5 )	1
B	—	2.88 ( 73.2 )	2.92 ( 74.2 )	
C	1.240 ( 31.50 )	1.250 ( 31.8 )	1.260 ( 32.0 )	
D	.368 ( 9.35 )	.372 ( 9.45 )	.376 ( 9.55 )	
E	3.12 ( 79.2 )	3.13 ( 79.5 )	3.14 ( 79.8 )	1, 3
F	—	8.00 (203.2 )	8.18 (207.8 )	
G	5.36 (136.1 )	5.38 (136.7 )	5.39 (136.9 )	1, 3
H	—	4.72 (119.9 )	4.76 (120.9 )	
I	5.450 (138.43)	5.455 (138.56)	5.470 (138.94)	1
J	—	.75 ( 19.1 )	.85 ( 21.6 )	
K	2.94 ( 74.7 )	3.00 ( 76.2 )	3.06 ( 77.7 )	
L	15.00 ( 38.1 )	15.22 (386.6 )	15.47 (392.9 )	
M	1.01 ( 25.7 )	1.19 ( 30.2 )	1.38 ( 35.1 )	
N	.05 ( 1.3 )	.08 ( 2.0 )	.12 ( 3.0 )	
O	.03 ( 0.8 )	.04 ( 1.0 )	.05 ( 1.3 )	
P	3.4 ( 86.4 )	3.9 ( 99.1 )	4.2 (106.7 )	
Q	—	1.00 ( 25.4 )	1.15 ( 29.2 )	

**NOTES:**

1. Allow additional  $\pm .01''$  for out of roundness.
2. Three thumb screws for retaining oil-cooling jacket.
3. Do not clamp on this surface (spring contact only).
4. Allow clearance for circulation of oil through holes.
5. Oil inlet connection 1" IPT. Oil discharges into enclosure.
6. Tube is shown with oil cooling jacket which is optional — refer to ORDERING NOTES.

