

ML-6544

**Shielded
Grid Triode**
Pulse Power
to 1 Mw

ELECTRON TUBE SPECIALIST

DESCRIPTION

The ML-6544 is a shielded-grid triode designed primarily for use as a switch tube in hard-tube pulse modulators for radar applications. It delivers a peak pulse power output of one megawatt with less than 10 kW of driving power. The tube incorporates a beamed electrode structure to minimize driving power. This design avoids the fine-wire grids usually used in tetrodes and provides a rugged structure. The shield grid is strapped to the cathode internally and protects the cathode from transient arcs. These features provide a tube

which operates much more stably at high voltages than hard-tube modulators of earlier design. The high amplification factor coupled with low grid current result in unusually low driving power requirements. Additionally, the input and output circuits are isolated so that feedback capacitance is small. The cathode is a unipotential oxide-coated type. The anode is forced-air cooled and is capable of dissipating 1 kW with an air flow of 80 cfm.

GENERAL CHARACTERISTICS

Electrical

Filament Voltage	6.0 \pm 5% Volts
Filament Current	60 Amps
Filament Starting Current, maximum	300 Amps
Cathode Warm-Up Time \ddagger	10 Min
Amplification Factor	90
Interelectrode Capacitances	
Grid-Plate, maximum	4 μ f
Grid-Filament	260 μ f
Plate-Filament	40 μ f
Strapped Resonant Frequency, grid to cathode, approximate	63.5 Mc

Mechanical

Mounting Position (support tube by anode radiator only)	Any
Type of Cooling	Forced-air \dagger
Air flow on anode (at 45°C and 14.7 psi ambient atmospheric pressure)	80 cfm*
Static Pressure, Inches of Water	0.2
Air flow on grid radiator, minimum	5 cfm
Maximum incoming air temperature	75 °C
Maximum Glass Temperature	175 °C \dagger
Net Weight, approximate	13 lbs.

\ddagger For accelerated cathode warm-up, the filament may be energized at 7.0 volts for 5 minutes and then reduced to 6.0 volts for high-voltage operation. If a filament stand-by voltage of 5.0 volts is used, the minimum cathode warm-up time is 1 minute at 6.0 volts.

\dagger Sufficient air cooling must be provided to keep glass seal temperatures at less than 175°C under all conditions of operation.

*For air-flow requirements at other temperatures and pressures, consult the Machlett Engineering Department.

**MAXIMUM RATINGS
AND TYPICAL OPERATING CONDITIONS**

Pulse Modulator or Pulse Amplifier

Maximum Ratings, Absolute Values

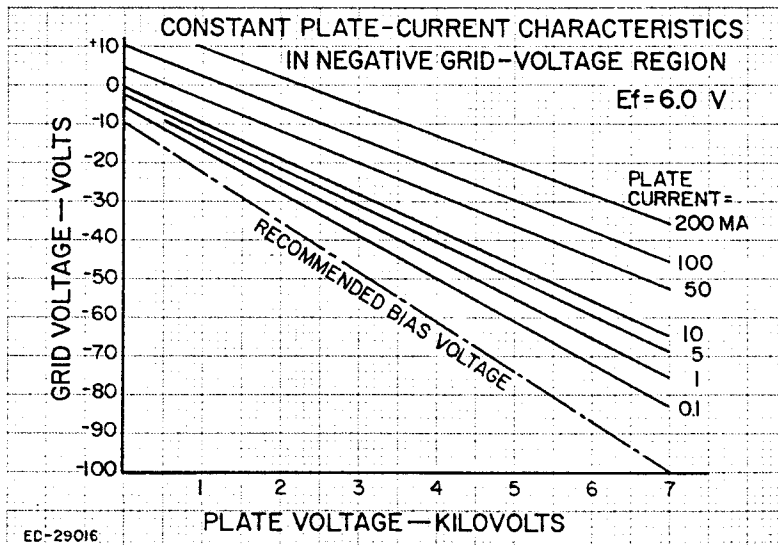
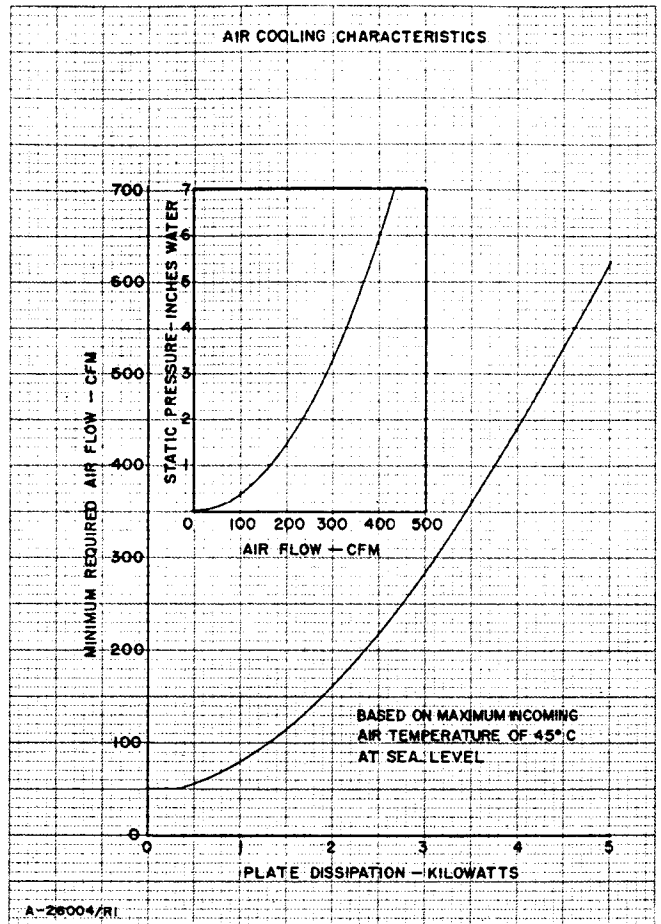
D-C Plate Voltage	20	kV
Peak Plate Voltage	25	kv
D-C Grid Voltage	-600	volts
Peak Positive Grid Voltage	1500	volts
Peak Negative Grid Voltage	-1500	volts
Pulse Cathode Current	75	amp
D-C Plate Current	250	mA
Grid Dissipation	75	watts
Plate Dissipation	1.0	kW
Pulse Duration	6	μ sec*
Duty Factor03*	

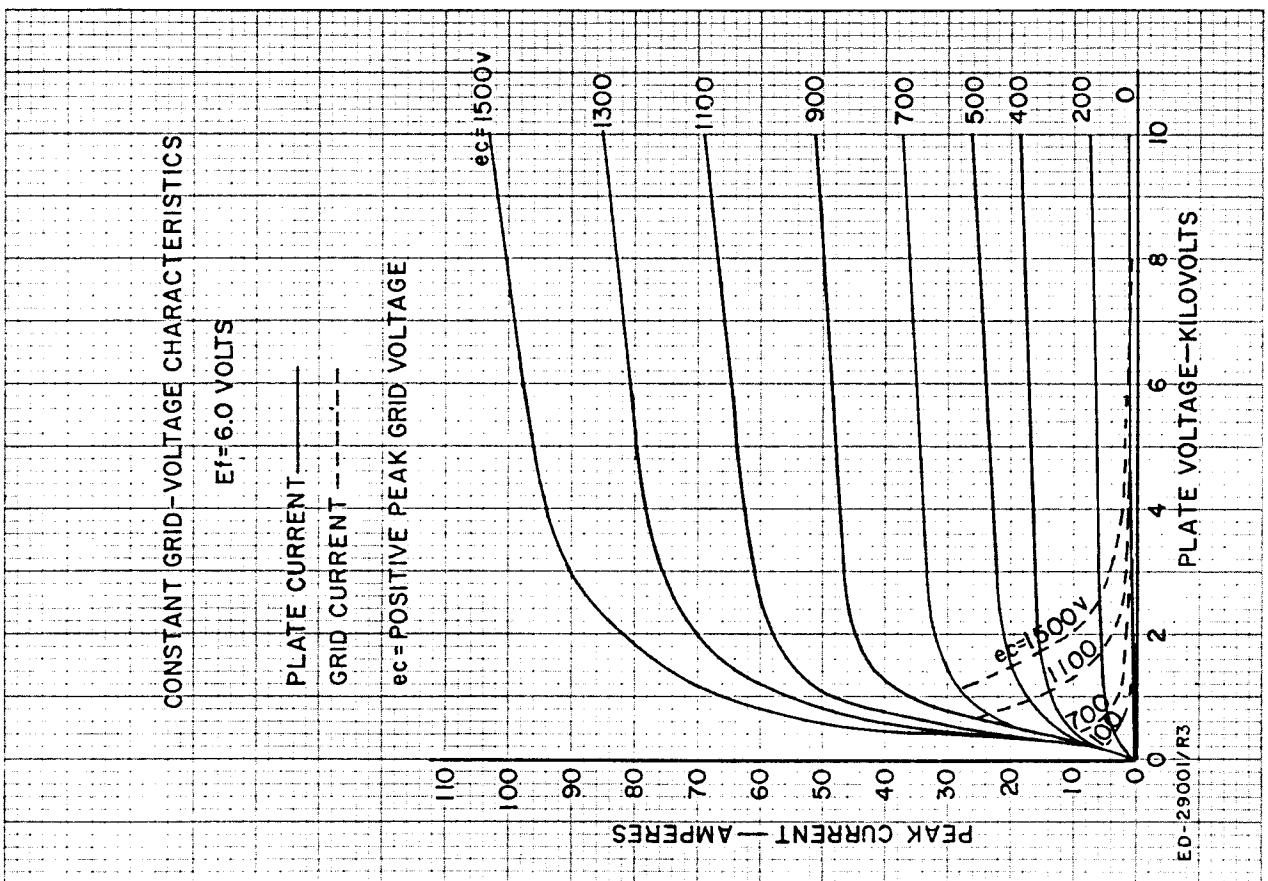
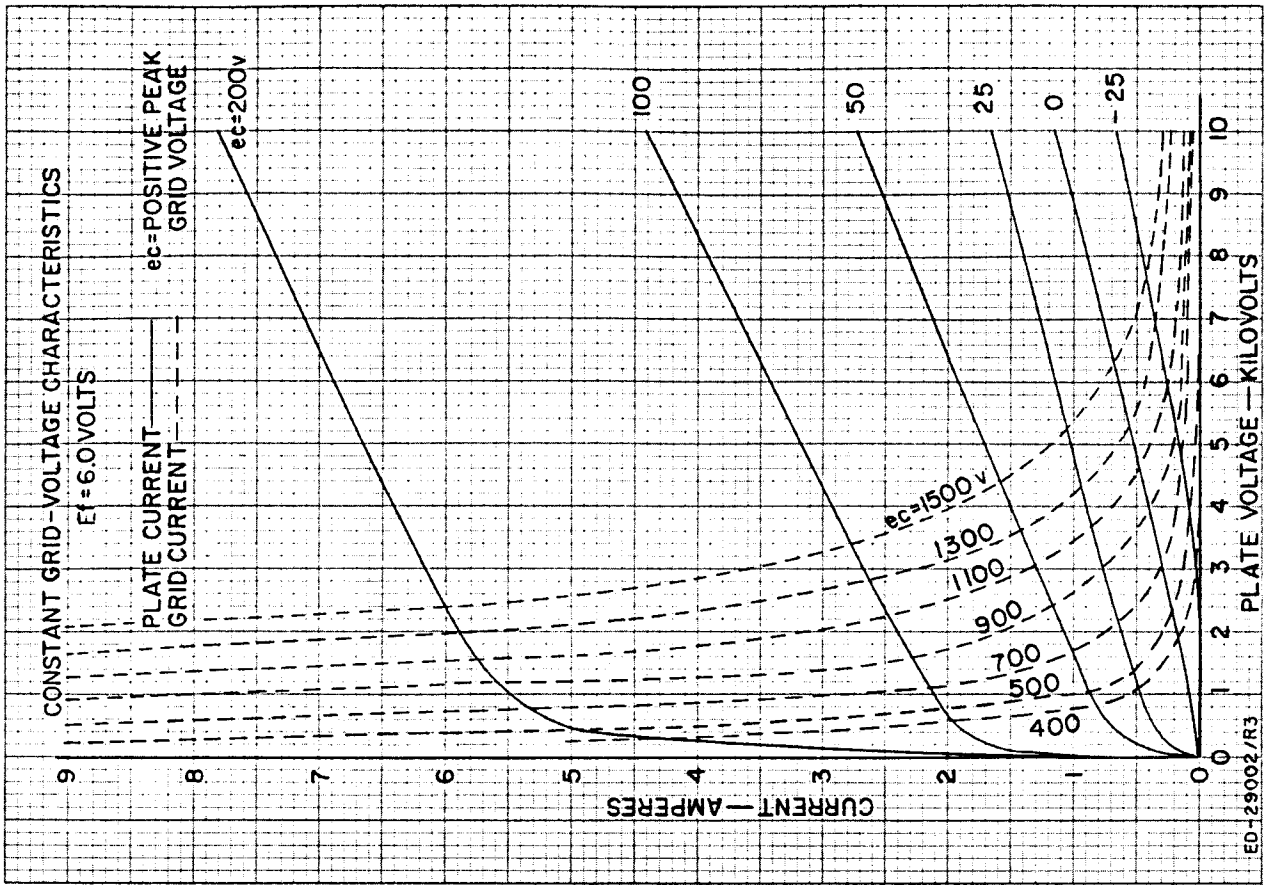
Typical Operation

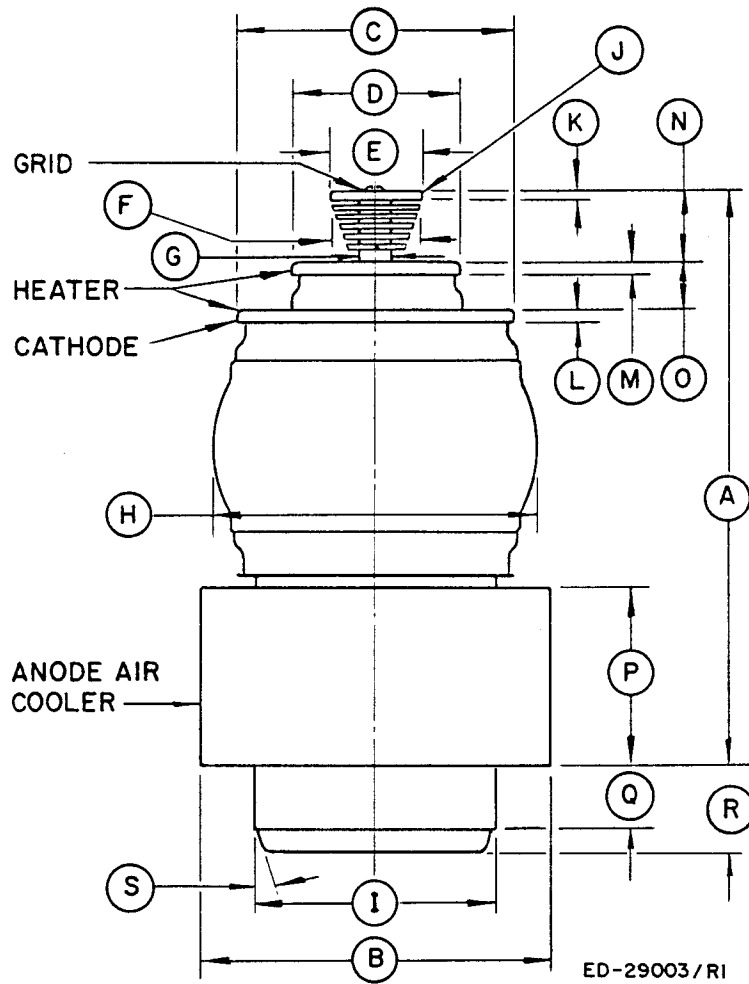
D-C Plate Voltage	18	kV
D-C Grid Voltage	-250	volts
Pulse Positive Grid Voltage	1200	volts
Pulse Plate Current	65	amp
Pulse Grid Current	7	amp
Pulse Driving Power	12	kw
Pulse Power Output	1.0	Mw
Plate Output Voltage	15.5	kv
Duty Factor003	

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

WARNING: Operation of this tube may produce x-rays. Adequate rayproof shielding must therefore be provided in the equipment.







DIMENSIONS FOR OUTLINE OF ML-6544

Ref.	Inches			Notes
	Minimum	Nominal	Maximum	
A			$8\frac{5}{8}$	
B	5.075	5.125	5.135	
C	$4\frac{3}{64}$	$4\frac{1}{16}$	$4\frac{5}{64}$	
D	$2\frac{27}{64}$	$2\frac{7}{16}$	$2\frac{29}{64}$	
E	1.370	1.375	1.380	
F			$1\frac{5}{16}$	
G			$1\frac{1}{16}$	
H			$4\frac{7}{8}$	
I	$\frac{1}{32}$		$3\frac{9}{16}$	radius
J	.135	.140	.145	
K	$\frac{11}{64}$	$\frac{3}{16}$	$\frac{13}{64}$	
L				
M	$\frac{11}{64}$	$\frac{3}{16}$	$\frac{13}{64}$	
N	$\frac{31}{32}$	$1\frac{1}{32}$	$1\frac{3}{32}$	
O	$\frac{5}{8}$	$1\frac{1}{16}$	$\frac{3}{4}$	
P	$2\frac{3}{16}$	$2\frac{5}{8}$	$2\frac{11}{16}$	
Q			$\frac{15}{16}$	
R			$1\frac{3}{4}$	degrees
S	20			

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