

HARD TUBE PULSE MODULATOR TYPE WL-7413

The WL-7413 is a large three-electrode, immersion cooled tube designed to deliver 9 megawatts peak pulse power as a hard-tube modulator. The anode is capable of dissipating 14 kilowatts, exclusive of filament heating power, when oil cooled or 50 kilowatts when water cooled. The cathode is a multiple-strand, thoriated-tungsten filament which may be operated either single phase or 3 phase.

ELECTRICAL:

Cathode	Multiple-Strand, Thoriated-Tungsten Filament		
Filament:			
Voltage:			
Single Phase Connection	12	Volts	
3 Phase Connection (to neutral)	12	Volts	
Current:			
Single Phase Connection	309	Amperes	
3 Phase Connection (per phase)	103	Amperes	
Minimum Filament Heating Time	15	Seconds	
Amplification Factor	21		
Direct Interelectrode Capacitances: (approx.)			
Grid to Plate	42	μf	
Grid to Filament	95	μf	
Plate to Filament	6	μf	

MECHANICAL:

Mounting Position	Vertical, Anode Down		
Net Weight (approx.)	25 Pounds		
Shipping Weight (approx.)	90 Pounds		
Cooling:			
Type	Oil	Water	
Maximum Fluid Temperature	80	45	°C
Maximum Bulb & Seal Temperature	180	180	°C
Minimum Water Flow	--	30	G.P.M.

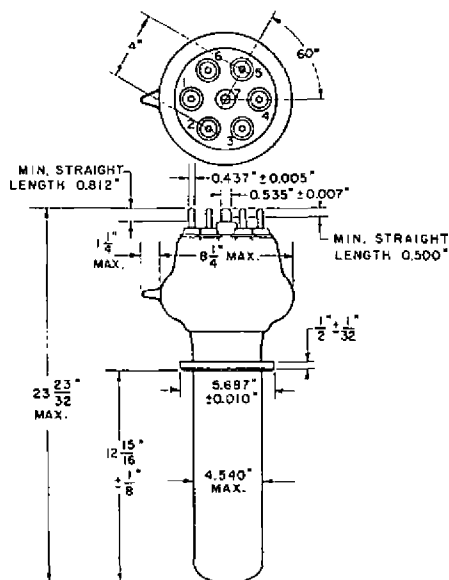
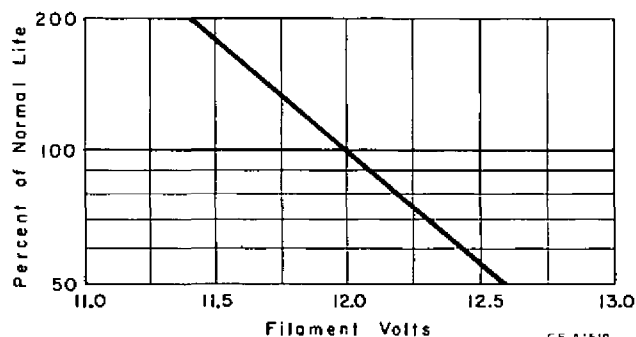
MAXIMUM RATINGS

Absolute Maximum Values

DC Plate Voltage	60	max.	Kilovolts
DC Grid Voltage	-3500	max.	Volts
Peak Positive Grid Voltage	2500	max.	Volts
Peak Pulse Plate Current	150	max.	Amperes
Peak Pulse Grid Current	50	max.	Amperes
Plate Dissipation:			
Oil Cooled	14	max.	Kilowatts
Water Cooled	50	max.	Kilowatts
Grid Dissipation	1.0	max.	Kilowatts
Pulse Length	1000	max.	$\mu\text{seconds}$
Duty Factor	0.01	max.	
Peak Pulse Cathode Current	200	max.	Amperes

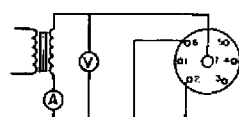
X-Ray Warning: The Maximum Ratings of the WL-7413 permit operation at voltages in excess of 16 KV. Therefore equipment design considerations should include the possible generation of soft x-rays.

FILAMENT EMISSION LIFE CHARACTERISTIC



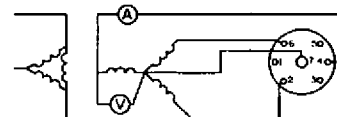
FILAMENT CONNECTIONS

SINGLE PHASE AC SUPPLY



V=12 VOLTS
A=309 AMPERES

THREE PHASE AC SUPPLY

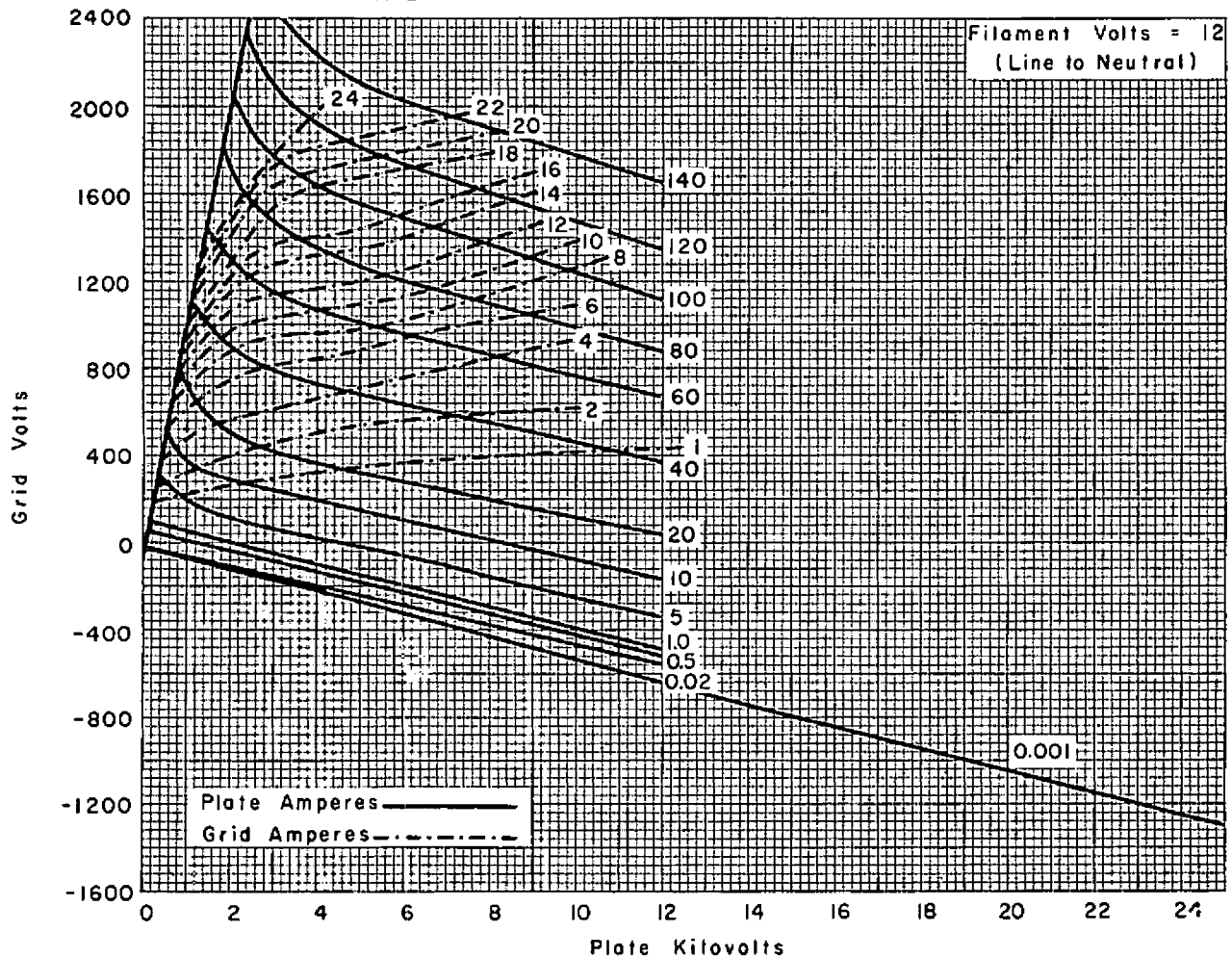


V=12 VOLTS TO NEUTRAL
A=103 AMPERES PER PHASE

FILAMENT TERMINALS 2, 4, 6 & 7 PAINTED BLACK
GRID TERMINALS 1, 3, & 5 PAINTED RED

CE 11573

AVERAGE CONSTANT CURRENT CHARACTERISTICS



HIGH VOLTAGE CUT-OFF CHARACTERISTIC

