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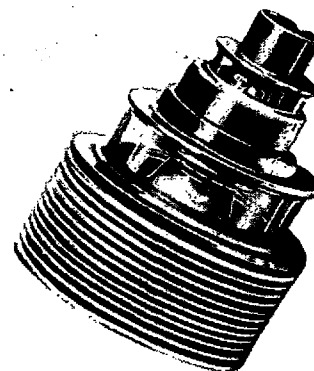
TRIODES TH 6885 - TH 6886

The TH 6885-TH 6886 tubes are triodes of planar electrode construction, forced air cooled, for use as an oscillator, amplifier or frequency multiplier at very high and ultra high frequencies up to 3000 megacycles.

The electrodes terminals were designed to provide easy mounting in resonating cavities - circular cavities, coaxial lines, etc.- and very low lead inductance.

The anode can dissipate 250 W.

Two types can be supplied : TH 6885 for CW operation and TH 6886 for pulse operation.



GENERAL CHARACTERISTICS (2)

ELECTRICAL

Type of cathode	oxide - coated
Heating	indirect
Heater voltage	6.3 V (1)
Heater current (approx.)	2.1 A
Cathode heating time minimum	120 s
Direct interelectrodes capacitances :	
Grid-cathode { cold	12 μF
hot	14 μF
Grid-anode (total capacity)	3.6 μF
Cathode-anode	0.06 μF
Amplification factor	80
Transconductance ($I_p = 350 \text{ mA}$)	29,500 μmho

MECHANICAL

Mounting position	any
Anode cooling	forced air
Maximum temperature of radiator top	see curve page 4
Maximum temperature of the electrodes terminals	140 $^{\circ}\text{C}$
Approximate net weight	172 g
Outside dimensions	see drawing page 8

- (1) In order to secure a maximum life, it may be eventually necessary to decrease the heater voltage if the tube is used in continuous duty at frequencies above 1000 megacycles. Our Company is to be consulted on the subject.
- (2) These characteristics are given as indications only. Refer to specifications for typical characteristics.



MAXIMUM RATINGS

	6885		6886	
	continuous duty without amplitude modulation	with amplitude modulation	pulse duty (pulse length 2 μ s max) $V_f = 6.3$ V $V_f = 7.0$ V	
Anode voltage	1200 V	1500 V peak	6000 V	6000 V
DC grid voltage	-150 V	-150 V		
DC cathode current	250 mA	200 mA	9 A	15 A
DC grid current	50 mA	50 mA		
Duty cycle			0.0005	0.0005
Anode dissipation	250 W			
Grid dissipation	2 W			

TYPICAL OPERATION

a) Radio frequency oscillator (6885)

	Frequencies :	1000 MC	1500 MC	3000 MC
DC anode voltage		1200 V	1200 V	1200 V
DC grid voltage		-60 V	-45 V	-30 V
(Cathode bias resistor operation)				
DC anode current		200 mA	200 mA	200 mA
DC grid current		20 mA	10 mA	3 mA
Power output approx.		64 W	52 W	16 W

b) Plate pulsed power oscillator (6886)

	Frequency :	3000 MC
Heater voltage		6.3 V
Peak anode voltage		6000 V
DC grid voltage		-100 V
(Cathode bias resistor operation)		
Peak anode current		6 A
Peak grid current		2.5 A
Peak power output useful		7 kW
Pulse length		1 μ s
Repetition frequency		500 pps

With somewhat reduced life time the tube can be operated in the following conditions :

	Frequency :	3000 MC
Heater voltage		7 V
Peak anode voltage		6000 V
DC grid voltage		0 V
Peak anode current		12 A
Peak power output useful approx.		12 kW
Pulse length		1 μ s
Repetition frequency		500 pps

COOLING & MOUNTING

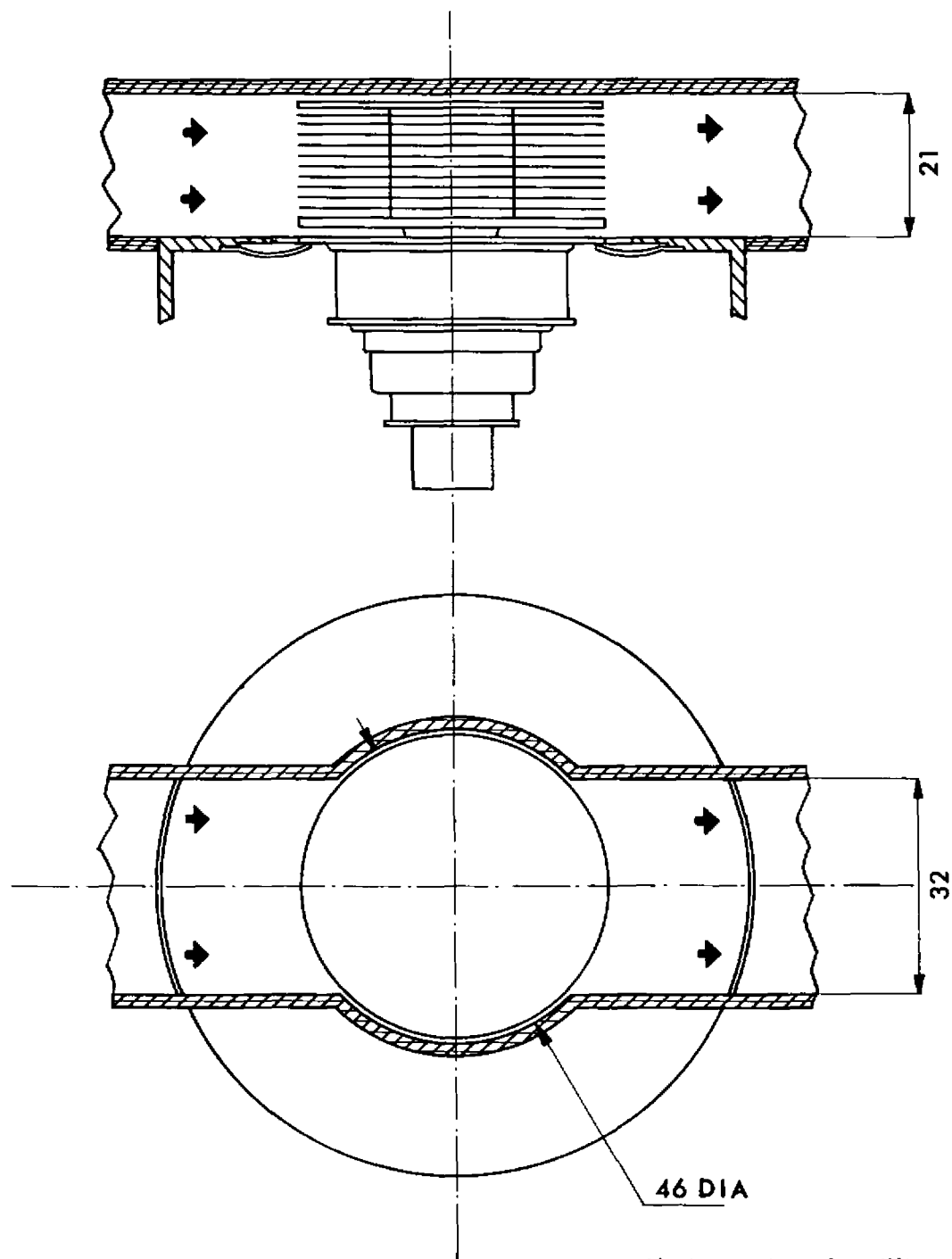
The contact zones of the grid, the cathode and the filament must be cooled so that the temperature will not exceed 140 °C. The cooling of these zones must last two minutes after the interruption of the heating.

The anode radiator must be cooled by means of an air flow guided by a duct, the section of which will conform partially with the outside of the radiator which will insure the air flow in the whole section of the radiator.

For example we indicate (page 3) the schematic arrangement of such a duct used for cavity transmitters. The curves (page 5) indicate in this case the flow of air necessary as a function of the anode dissipation for air intake temperatures from 20 °C to 50 °C and air pressure at the intake.

The contacts between the tube and the circuits, in particular those of the cathode, the anode and the grid, must be designed with the greatest care so that they will insure the flow of the current on the whole circumference of the electrodes, without however applying to the tube any shearing stresses. The anode contact will take place preferably on the flat lower portion of the anode disk, by means of a ring of springs an example of which is given, page 7. The grid contact can be obtained, depending on the nature of the circuit - plane cavity, coaxial line - either on the plane portion, or on the cylindrical portion of the central element of the tube.

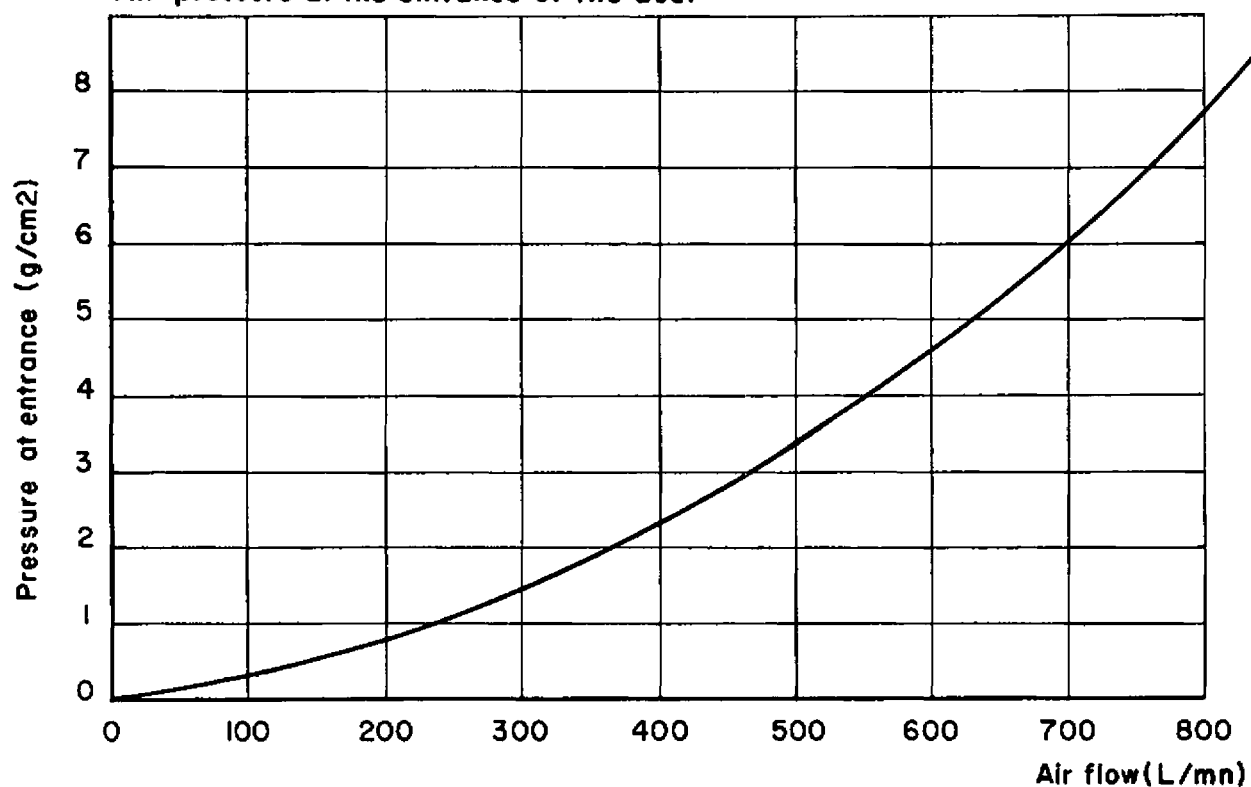
AIR DUCT



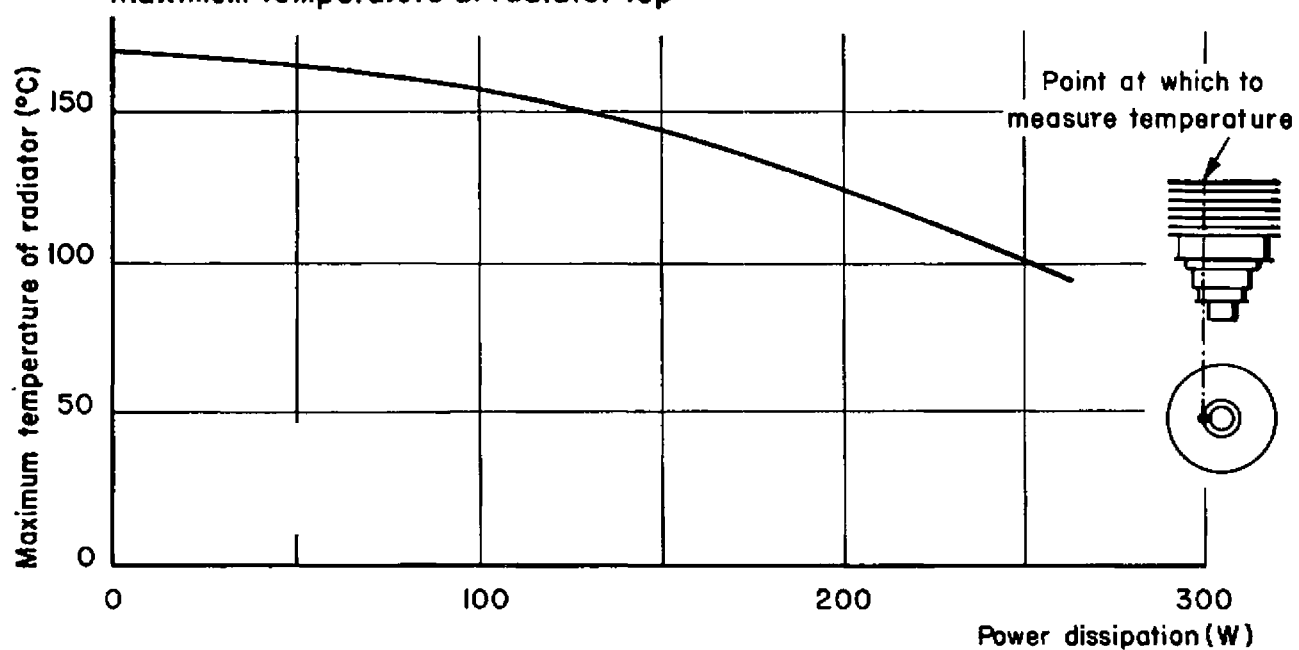
All dimensions in millimeters



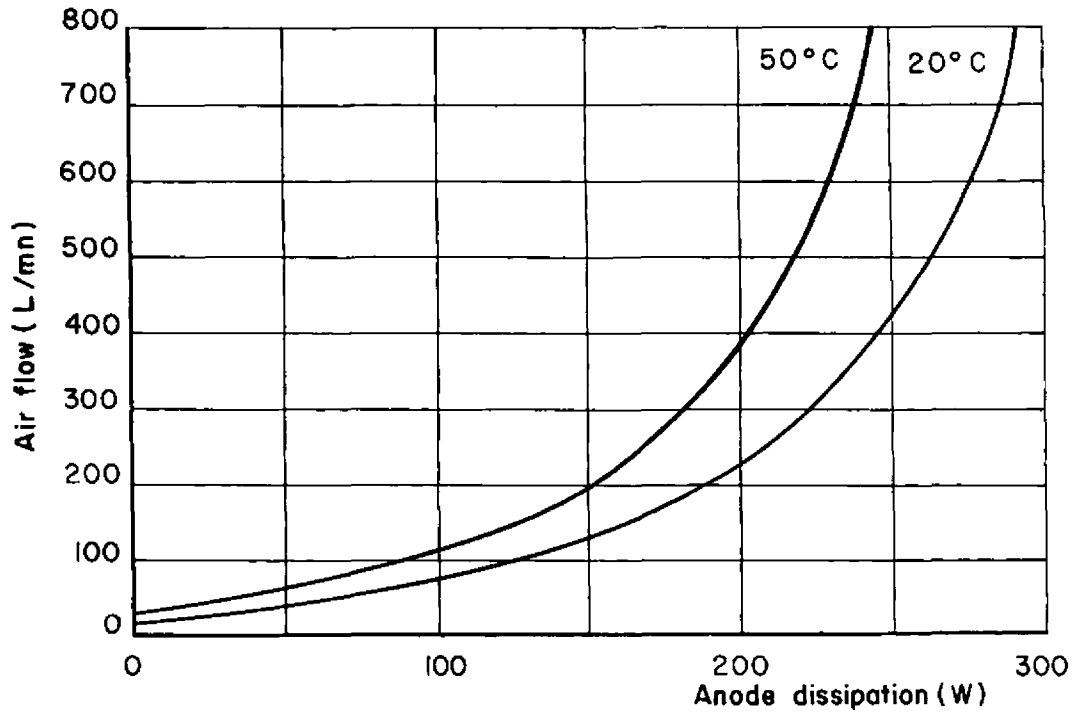
Air pressure at the entrance of the duct



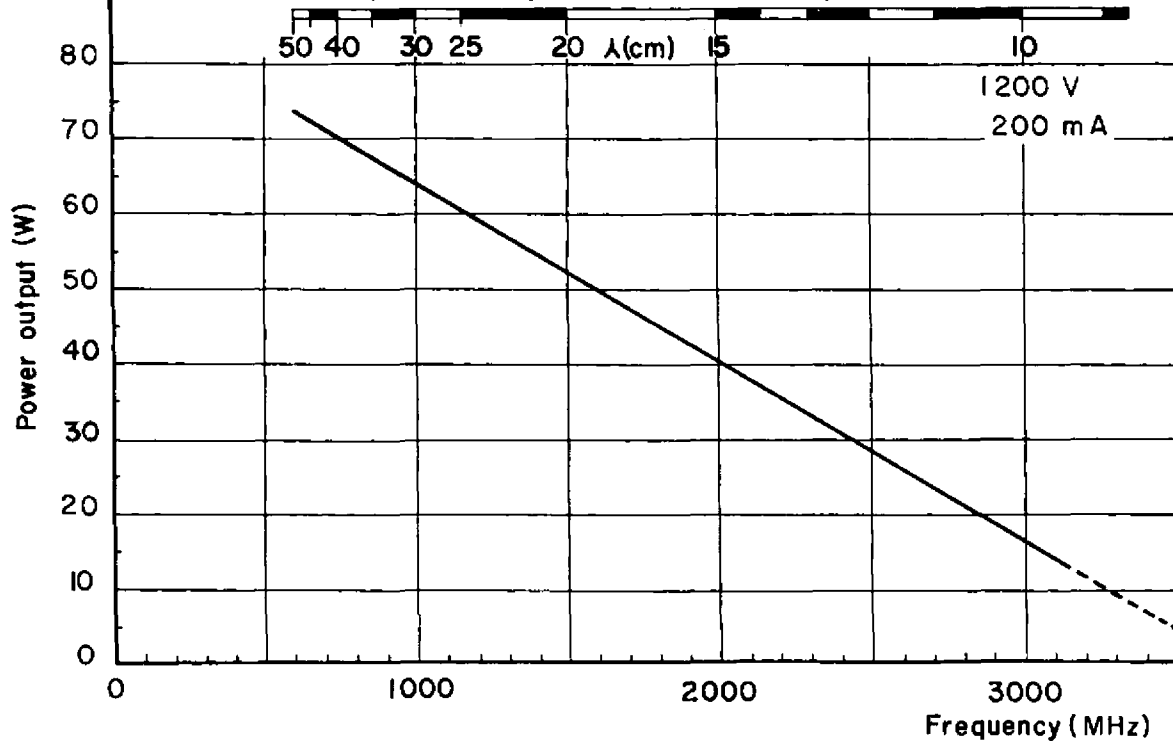
Maximum temperature at radiator top



Air flow versus anode dissipation for entrance temperatures from 20 to 50°C

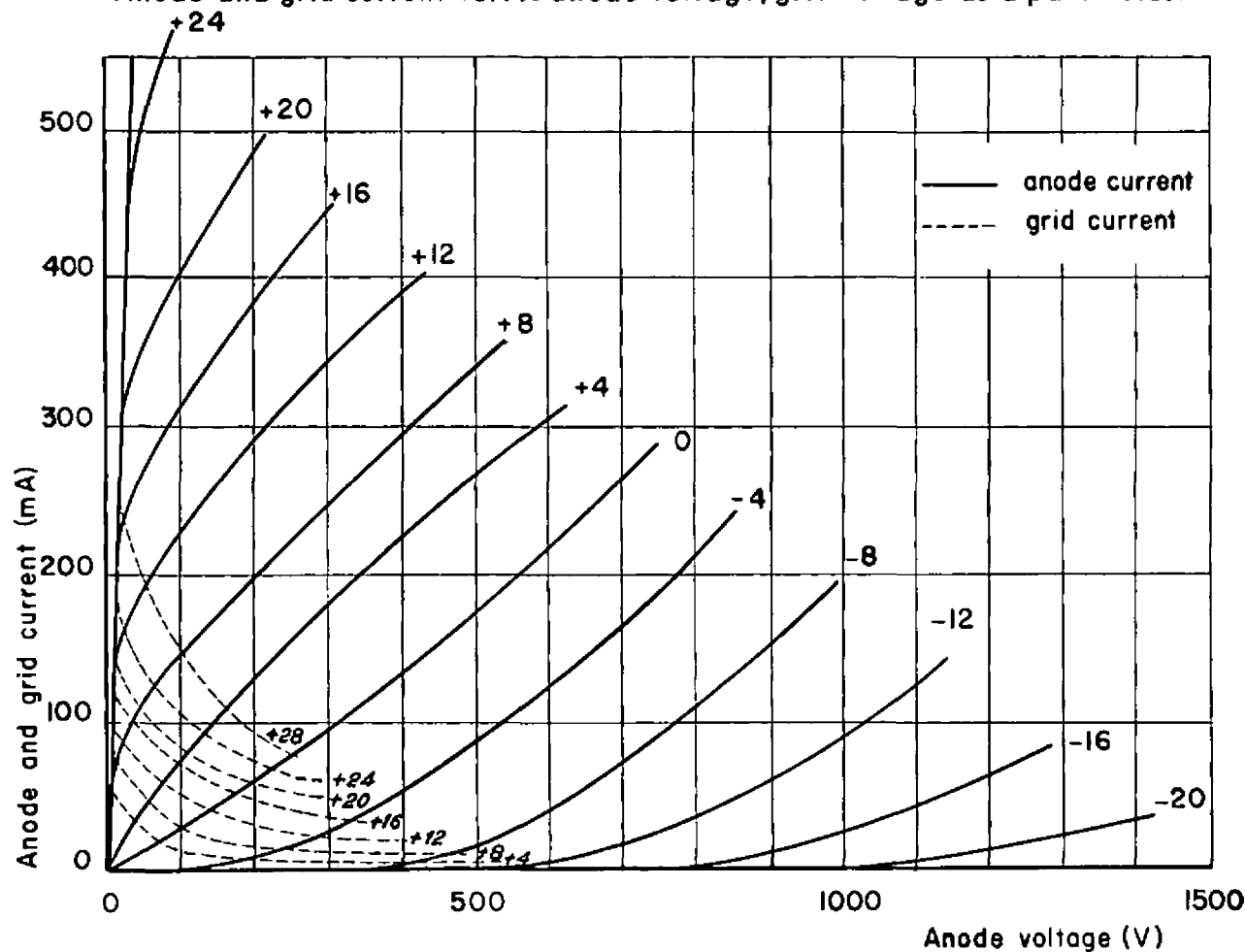


CW oscillator - power output versus frequency.

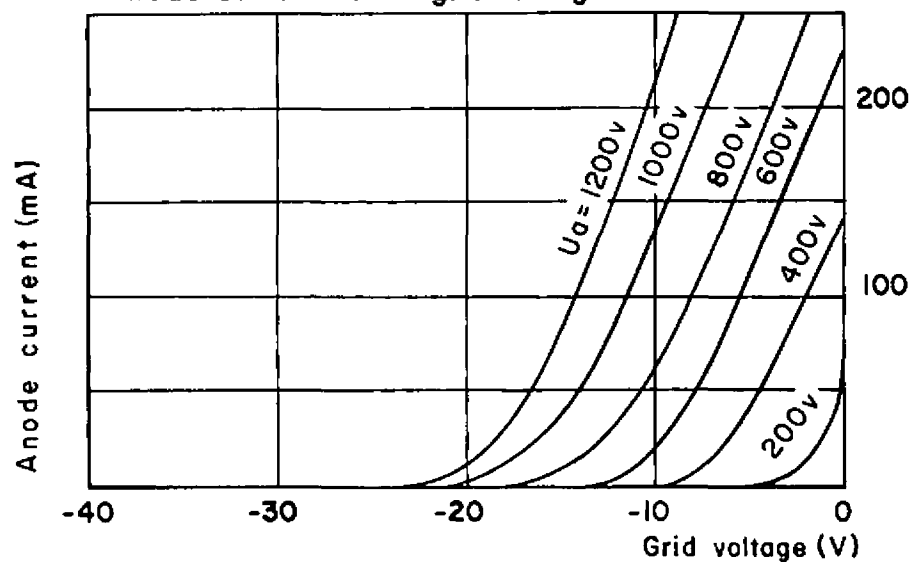




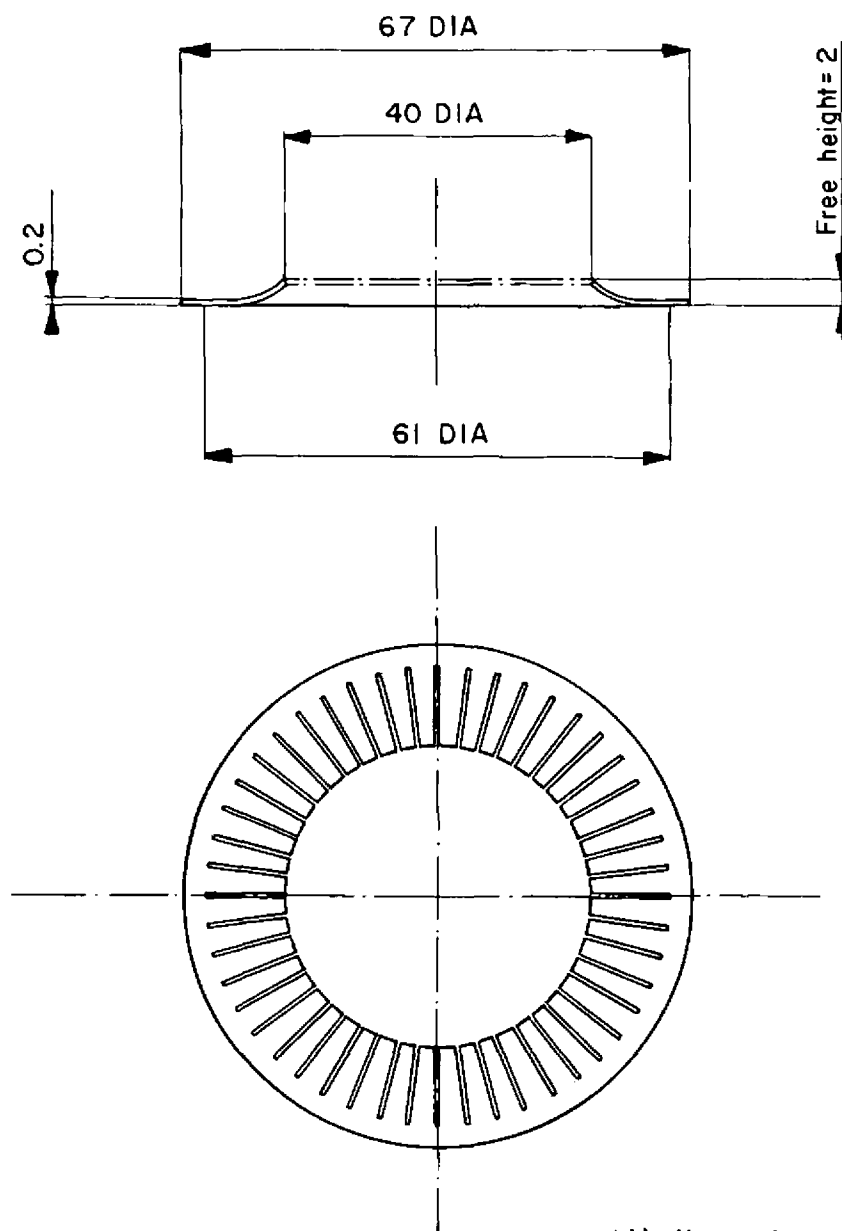
Anode and grid current versus anode voltage, grid voltage as a parameter.



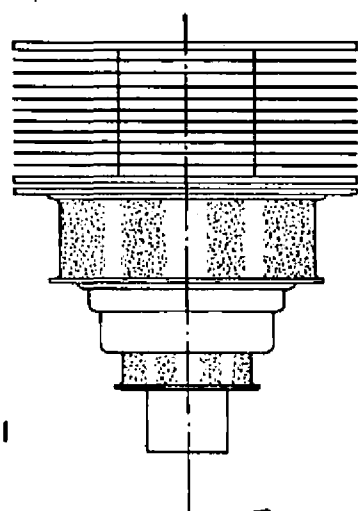
Anode current versus grid voltage.



Anode spring connection



All dimensions in millimeters



All dimensions in millimeters

