TH 362 TETRODE

The TH 362 is a ceramic-metal forced air cooled transmitting tetrode of coaxial structure. It can be used as a CW oscillator, AF or RF power amplifier operating up to 300 MHz. Its radiator can dissipate 12 kW.

GENERAL CHARACTERISTICS

Electrical

Type of cathode	thoriated tungsten	
Heating	direct	
Filament voltage	7.0 ± 2 %	V
Filament current	140	A
Maximum surge current	300	A
Preheating time	see note (4)	
Interelectrode capacitances :		
- cathode - grid g1	70	pF
- cathode - grid g2	35	pF
- cathode - anode	0.12	pF
- grid g1 - grid g2	92	pF
- grid g1 - anode	0.8	pF
- grid g2 - anode	18	pF
Amplification factor g1 - g2	5.5	
Transconductance (i_a = 2 A)	60	mA/V

Mechanical

Operating position	vertical	
Anode cooling	forced air	
Minimum airflow on anode (inlet air temperature 30°C and anode dissipation 12 kW)	13	m^3/mn
Corresponding pressure drop	9	mbar
Maximum temperature of inlet air	45	°C
Maximum temperature of outlet air	100	°C
Maximum temperature of electrode terminals	250	°C
Dimensions	see drawing	
Net weight, approx.	7.5	kg

R.F. POWER AMPLIFIER - TELEVISION CLASS AB

Negative modulation - Positive synchronization

Maximum ratings

Anode voltage	7	kV
Grid g2 voltage	800	V
Grid g1 voltage	− 200	V
Peak cathode current	30	A
D.C. anode current	6	A
Anode dissipation	12	kW
Grid g2 dissipation	150	W
Grid g1 dissipation	50	W
Frequency	300	MHz

Typical operation Grounded grid

Frequency	260	260	MHz
Bandwidth (at 1 dB*)	8	8	MHz
D.C. anode voltage	5800	6200	V
D.C. grid g2 voltage	500	500	V
D.C. grid g1 voltage (1)	− 85	− 85	V
Peak R.F. grid g1 voltage	105	115	V
Zero signal anode current	0. 7	0. 75	A
D.C. anode current	3. 5	3. 9	A
D.C. grid g2 current	75	100	mA
D.C. grid g1 current	150	200	mA
Driving power	250	300	W
Output power in the load	12. 5	15	kW

CLASS B NARROW BAND F.M. SERVICE - R.F. POWER AMPLIFIER

Maximum ratings

Anode voltage	8	kV
Grid g2 voltage	800	V
Grid g1 voltage	− 200	V
Peak cathode current	40	A
Average cathode current	6	A
Anode dissipation	12	kW
Grid g2 dissipation	250	W
Grid g1 dissipation	100	W
Frequency	120	MHz

* With double tuned circuits.

(1) Adjusted in order to obtain the mentioned anode current at zero driving signal.

Typical operation Grounded cathode

Frequency	110	110	MHz
D.C. anode voltage	7	7.5	kV
D.C. grid g2 voltage	500	500	V
D.C. grid g1 voltage (2)	−110	−110	V
Anode current at zero signal	0.25	0.25	A
D.C. anode current	2	2.3	A
D.C. grid g2 current	70	100	mA
D.C. grid g1 current	5	10	mA
Driving power (3)	25	30	W
Load output power	10	12	kW

(2) Adjusted in order to obtain the mentioned anode current at zero driving signal.

(3) Driving circuit losses included.

TUBE PROTECTION AND FEEDING INSTRUCTIONS

In order to achieve long tube life, maximum operating efficiency and circuit stability consistent with the full tube capability, the following instructions should be strictly observed.

I - ELECTRODES FEEDING ORDER - Apply successively

1 - 1/2 V_f (filament voltage) during 60 seconds (note 4) ;
2 - Nominal V_f during 60 seconds (note 4) ;
3 - Grid bias ;
4 - Anode voltage ;
5 - Screen voltage ;
6 - Driving voltage.

II - SECURITY DEVICES AGAINST ANODE, SCREEN, GRID OVERCURRENTS

1 - Overcurrents due to unproper utilisation conditions : the protection can be achieved by 3 relays in series, respectively in grid, screen and anode circuits. These relays are adjusted so as to operate when a current equal to 1.5 Imax. is attained, Imax. being the normal current used in the considered operating conditions. When one of these relays operate, the driving voltage and the screen and anode voltages are cut-off, in that order or simultaneously.

2 - Overcurrent due to stray oscillations or electrode arcings : the protection can be made by the use of 3 rapid cut-off security devices (grid, screen, anode), acting for a current equal to 5 Imax., Imax. being the normal current used in the considered operating conditions. Each of these 3 systems acting on the 2 others should short-circuit driving, screen and anode voltages and eventually grid bias voltage with a total delay lower than 30 microseconds.

III - MONITORING DEVICES FOR OVERTEMPERATURE OF OUTLET COOLING AIR

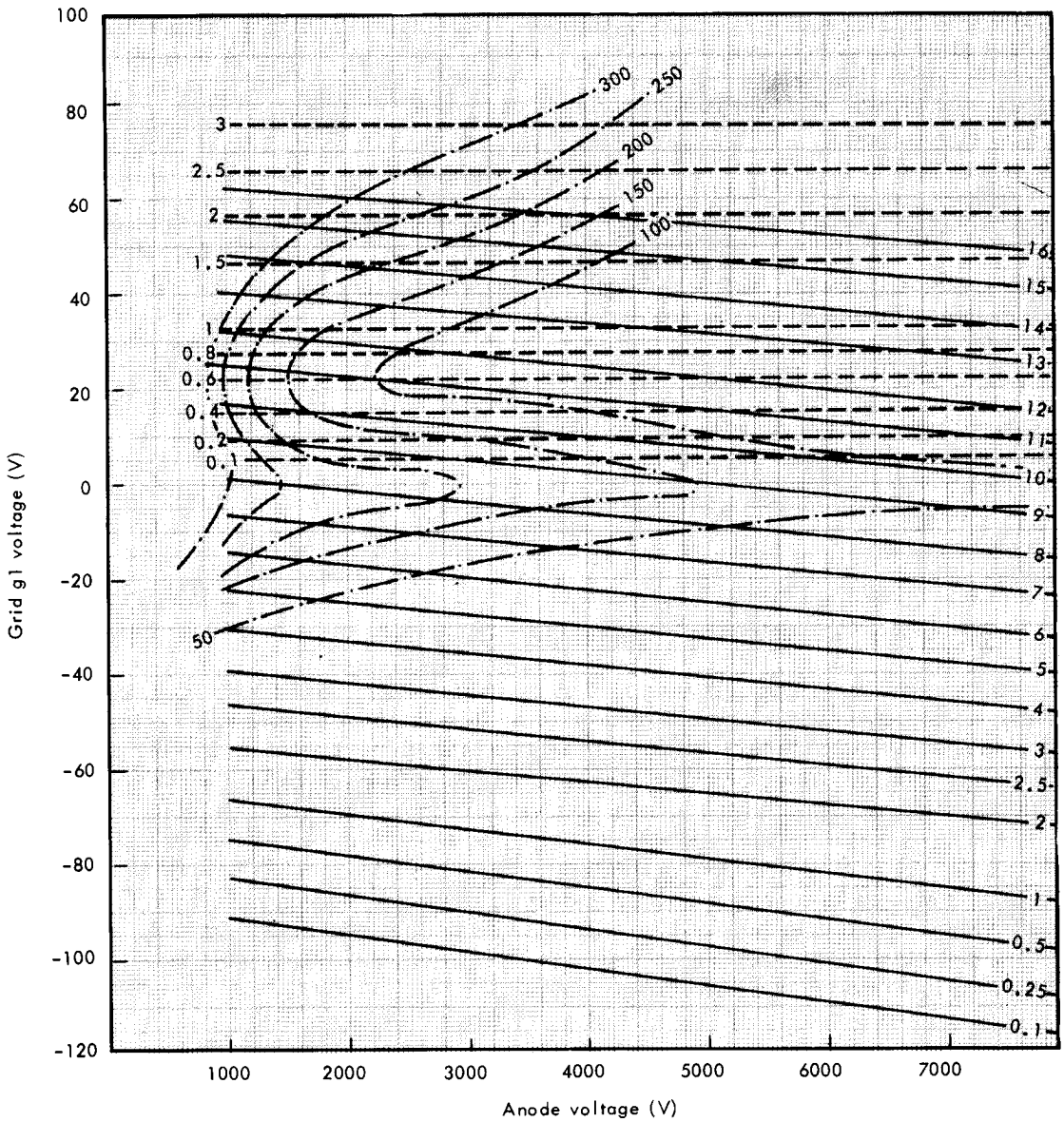
The temperature of the outlet air, coming from the anode cavity must not exceed 100 °C. The temperature rises when the cavity is not properly adjusted an it is necessary to provide a monitoring device so as to warn the user from improper adjustment.

Note 4 : In order to achieve a very long tube life and in the case of periodical startings of the tube. However, when necessary, the two indicated preheating times may be suppressed.

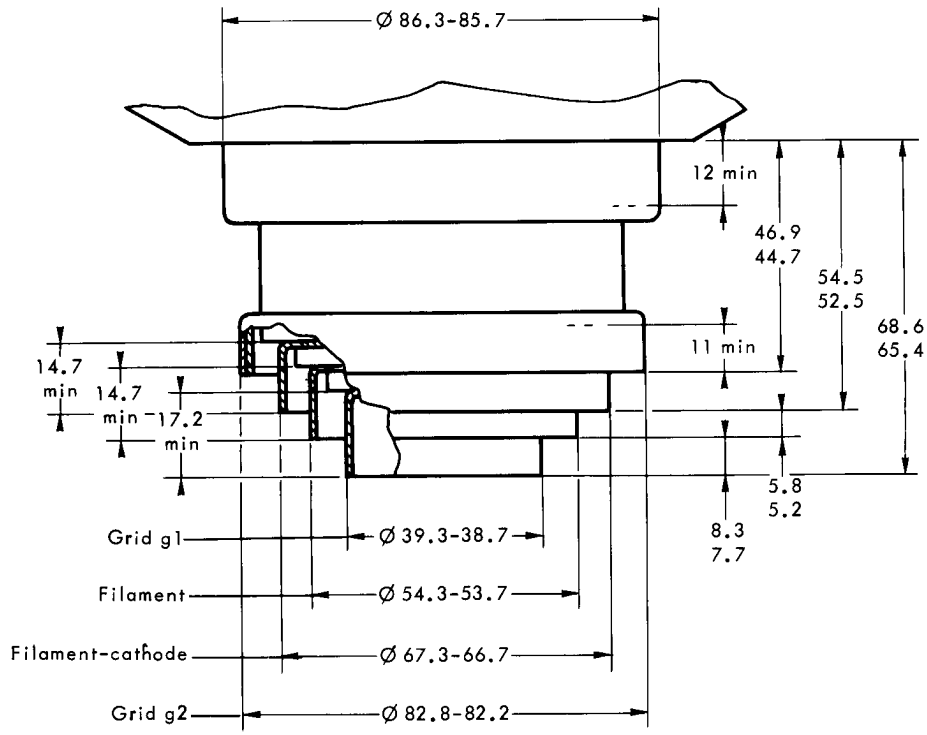
CONSTANT CURRENT CHARACTERISTICS

Vg2 = 500 V

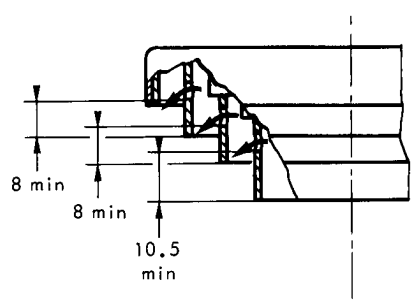
Anode current (A)
Grid g1 current (A)
Grid g2 current (mA)



DETAIL OF CONNECTIONS

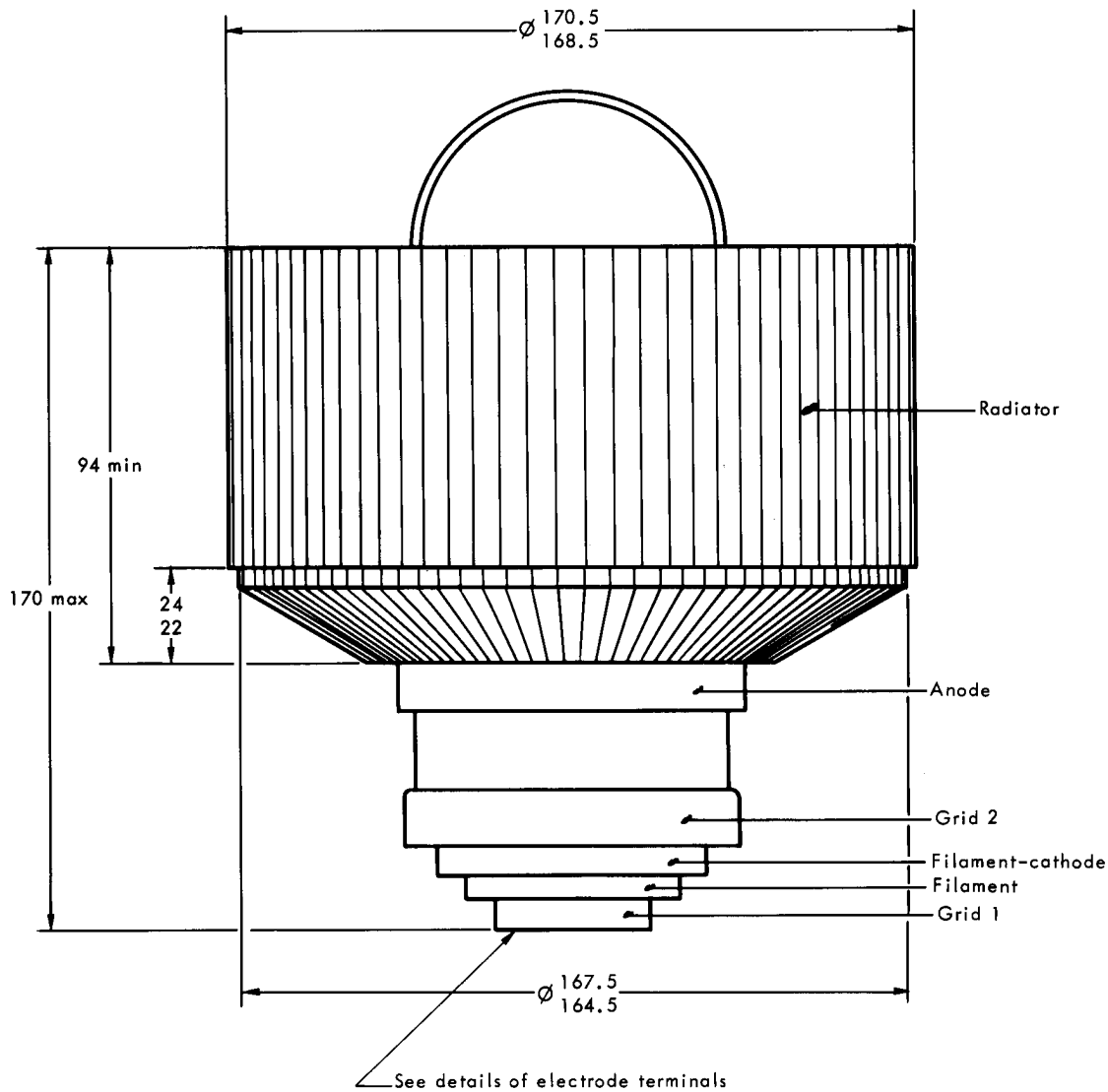


DETAIL OF COOLING APERTURE ON G1, FK, F CONNECTIONS AND MAXIMUM HEIGHTS FOR CONTACT



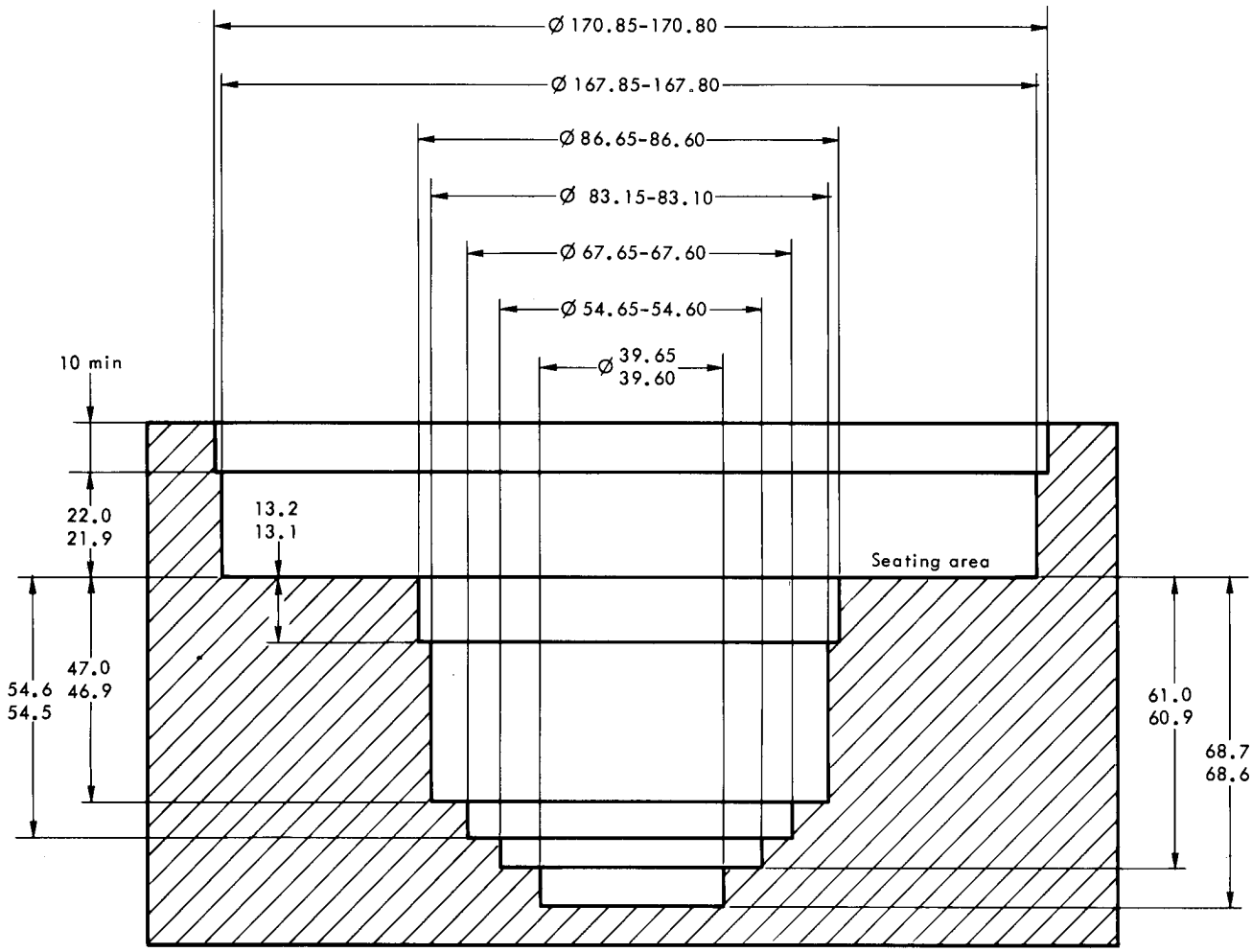
Dimensions in mm.

OUTLINE DRAWING



Dimensions in mm.

GAUGE



Dimensions in mm.

TH 362

THOMSON-CSF

GROUPEMENT TUBES ELECTRONIQUES