TH 167A TRIODE

The TH 167 A is a water cooled transmitting triode used as an oscillator in R.F. industrial generators and especially in dielectric heating. It can be operated at full load up to 30 MHz.

The anode equipped with a removable cooler can dissipate 50 kW.

GENERAL CHARACTERISTICS

Electrical

Type of cathode	thoriated tungsten	
Heating	direct DC or AC single phase	
Filament voltage	11.0 ± 5 %	V
Filament current, approximate	270	A
Maximum surge current	800	A
Filament resistance (cold)	0.005	Ω
Interelectrode capacitances :		
- cathode-grid	95	pF
- grid-anode	78	pF
- anode-cathode	2.5	pF
Amplification factor	27	
Transconductance (for I_a = 8 A)	60	mA/V

Mechanical

Operating position	vertical, anode down	
Anode cooling	water cooling	
Maximum temperature of glass and electrode terminals	150	°C
Cooling of glass and electrode terminals	forced air	
Cooling airflow	1	m^3/mn
Net weight, approximate (without cooler)	18	kg
Dimensions	see drawing	

Accessories

Cooler for water circulation	TH 11054
Filament connection	TH 13023
Grid connection :	
- up to 10 MHz	TH 13520
- above 10 MHz	TH 13521

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OPERATING CONDITIONS

OSCILLATOR FOR INDUSTRIAL APPLICATION

Maximum ratings

D.C. anode voltage	15. 0	kV
D.C. grid voltage	− 2 000	V
Peak cathode current	70	A
D.C. anode current	12	A
D.C. grid current	1 800	mA
Input power	150	kW
Anode dissipation (1)	50	kW
Grid dissipation	1. 8	kW
Frequency at full load	30	MHz

Typical operations

D.C. anode voltage	10. 0	12. 5	15	kV
D.C. grid voltage	− 600	− 800	− 900	V
Peak RF grid voltage	1 125	1 425	1 450	V
D.C. anode current	9. 5	10. 5	10	A
D.C. grid current, approximate	1. 3	1. 5	1. 5	A
Input power	95	132	150	kW
Anode dissipation	24	30	32	kW
Output power (2)	70	100	116	kW
Efficiency	74	76	77	%

(1) The indicated power corresponds to the maximum dissipation in the case of anode overload ; this value can not be used for the calculation of input and output powers.

(2) Without taking circuit losses into account.

PARTICULAR OPERATING INSTRUCTIONS

These particular instructions are complementary to the general instructions.

Mounting

Since shocks and vibrations are harmful, maximum tube life will be obtained if one avoids too much handling. In particular, the tube must only be taken out of its packing when alongside the boiler ; great care must be taken in mounting the tube in its cooler.

Heating

Before putting the tube into service, check with an ohmeter that the filament is undamaged ; also check the mounting and operating of security devices.

The filament voltage measured directly at the tube terminals must be kept within the specified range unless authorized by us. Any variation outside these limits will shorten the tube life.

During the filament voltage surge, the current must not exceed the indicated maximum value. This requirement is fulfilled either by a system enabling to increase the filament voltage in several steps or by using a leakage transformer.

Security devices

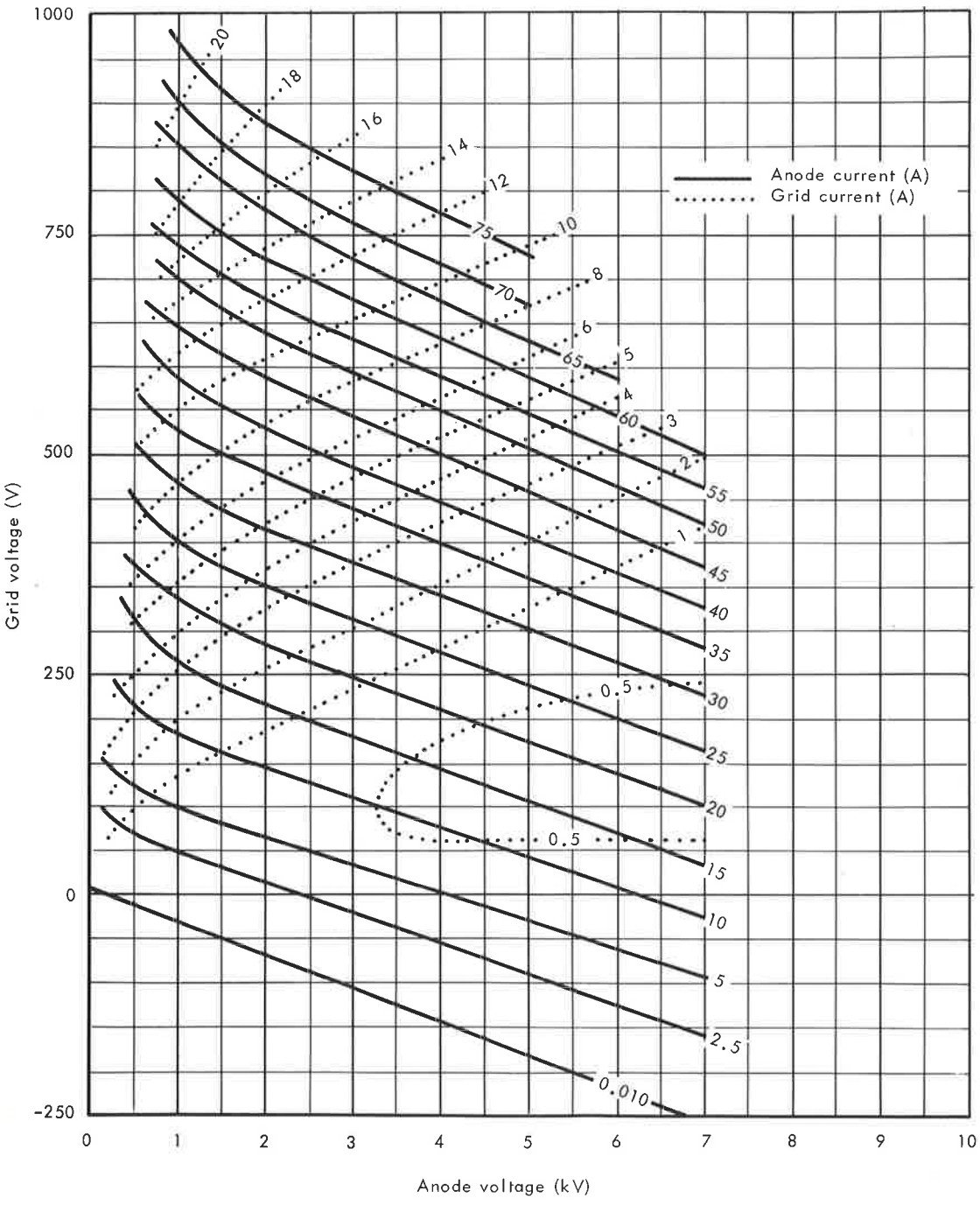
The anode power supply must be provided with a very high speed cut-off system and its short circuit peak current must be limited.

This must be checked by short-circuiting the anode supply using a copper fuse of 10/100 mm maximum.

On the other hand this tube, exhibiting high power and high transconductance, must be protected against stray oscillations before any voltage application by means of an efficient damping circuit.

The grid to ground spark gap must be in good condition and correctly adjusted.

CONSTANT CURRENT CHARACTERISTICS



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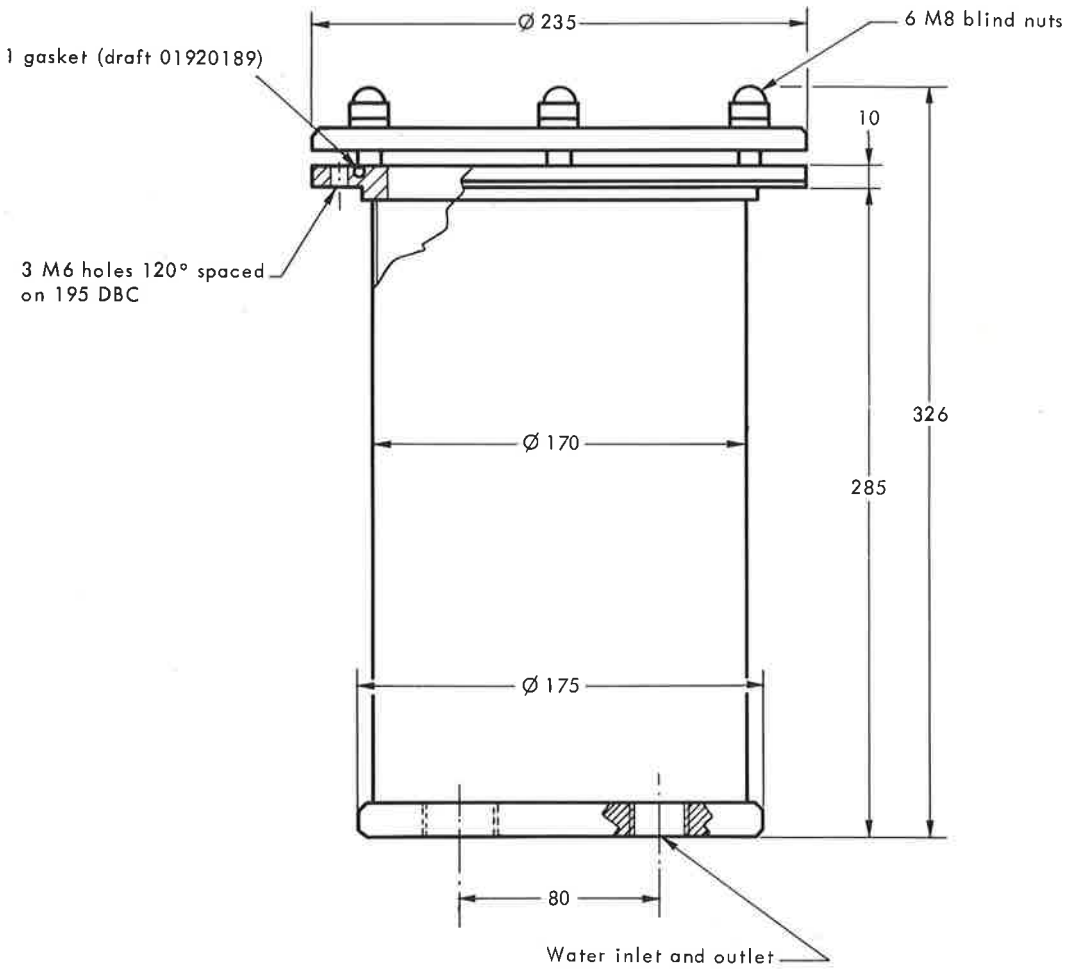
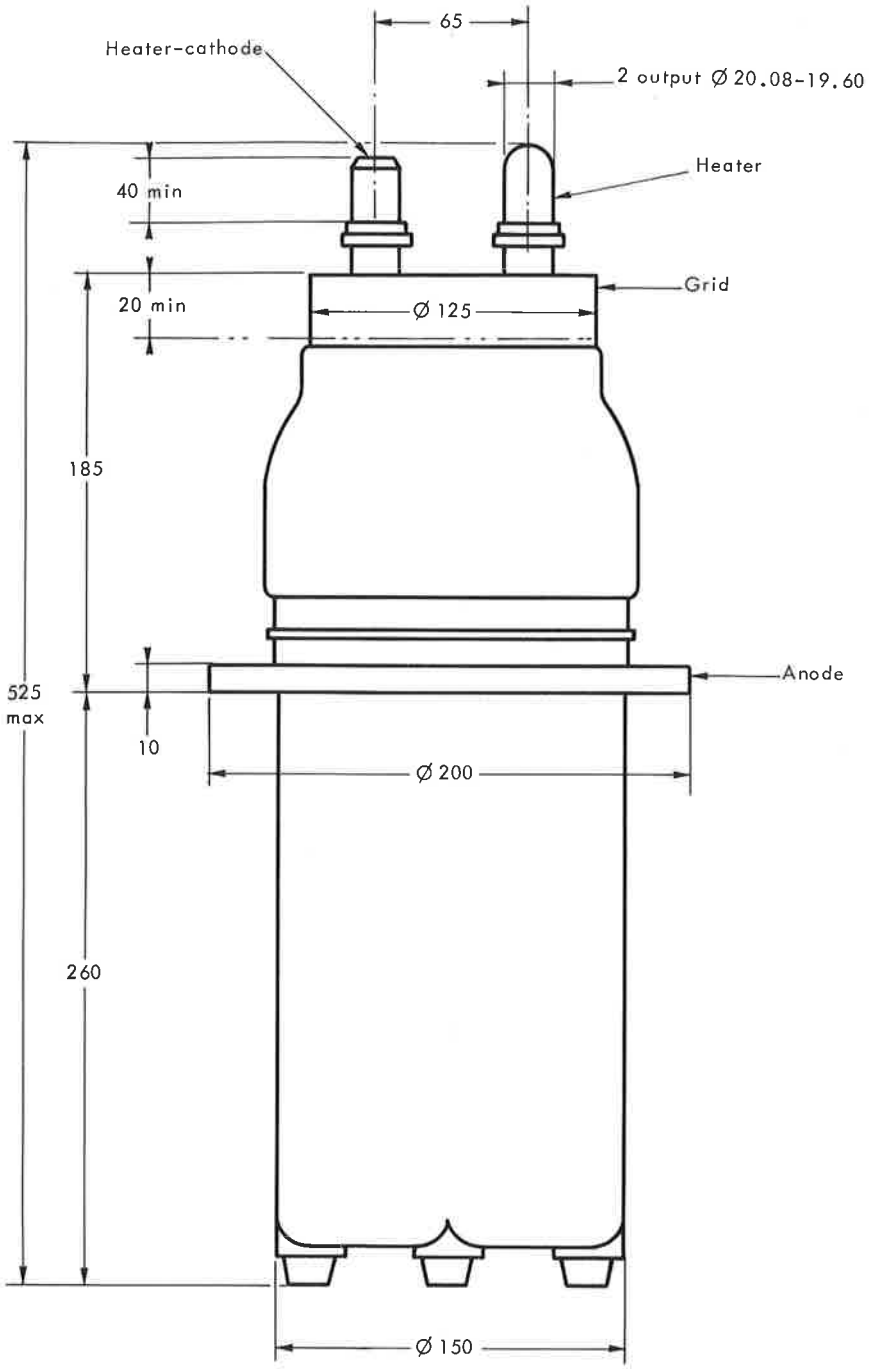
TH 11054 COOLER



Dimensions in mm.

OUTLINE DRAWING



Dimensions in mm.

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