

ITK 70-2

Water cooled triode

195 kW

- Output power:
195 kW in CW mode
- Anode voltage: 15 kV
- Anode dissipation: 100 kW
- Frequency up to 100 MHz





ITK 70-2

The ITK 70-2 is a RF power triode designed specifically for industrial applications.

This tube uses a coaxial design and metal-ceramic technology. This triode may be operated in CW or pulse modes.

For operation in pulse mode, the parameters depend on each equipment characteristics. Contact us for specific information.

The ITK 70-2 is a water cooled triode.

This product is designed, developed and manufactured at an ISO 9001 registered production site.

Electrical characteristics

Filament	thoriated tungsten		
Filament voltage (+ 5 %, - 10 %) (1)	12.2	V	
Filament current	255	A	
Surge current	1 250	A	max.
Cold resistance	5	m	
Capacitances:			
• grid-anode	55	pF	
• grid-cathode	170	pF	
• cathode-anode (2)	2.7	pF	
Amplification factor	30		approx.
Transconductance (Va: 12 kV, Ia: 6 A)	150	mA/V	approx.

Mechanical characteristics

Operating position	vertical, anode up or down		
Weight	11	kg	approx.
Dimensions	see outline drawing		

Maximum ratings

Frequency (3)	100	MHz	
Anode voltage:			
• up to 30 MHz	15	kV	
• from 30 to 60 MHz	13	kV	
• from 60 to 100 MHz	12	kV	
Control grid voltage	- 2 000	V	
Anode current, CW	20	A	
Control grid current:			
• at full load, CW	4	A	
• at no load, CW	6	A	
Peak cathode current, CW	100	A	
Anode voltage	15	kV	
Anode dissipation:			
• industrial cooling water	80	kW	
• distilled or deionized water	100	kW	
Grid dissipation:			
• up to 30 MHz	2.5	kW	
• from 30 to 60 MHz	2.2	kW	
• from 60 to 100 MHz	2.0	kW	
Grid resistance (tube non conducting)	10	K	

(1) At frequencies above 50 MHz, the filament voltage is reduced so that the ratio of filament voltage to current becomes the same as that without an anode voltage.

(2) Measured with a 40 x 40 cm shielding plate attached to the grid plate.

(3) Limited conditions above 60 MHz. Please consult Thales Electron Devices.

Cooling

Anode cooling	water		
Cooling water flow and pressure gradient	see cooling curves		
Temperature at outlet (industrial water)	see cooling curves		
Cooling water inlet pressure	5	bar	max.
Temperature at any point on tube envelope	220	°C	max.
Air flow on filament head	0.5	m ³ /min	

Typical operation (4)

Class C RF oscillator for industrial applications

Frequency	60	MHz
Anode voltage	12	kV
Grid bias	- 900	V
Grid voltage	1 266	V
Anode current	18.1	A
Grid current, on load	3.0	A
Anode input power	218	kW
Anode output power	169	kW
Anode dissipation	47	kW
Grid dissipation	2	kW
Grid resistance	300	
Feedback ratio	12.5	%
Oscillator efficiency	75	%

(4) Operation with higher frequencies on request.

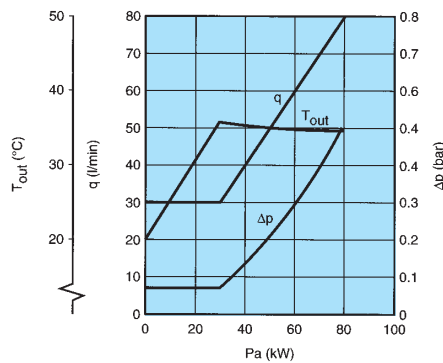
Cooling curves

Distilled, deionized or tap water may be used for cooling. The water flow rate and pressure drop required for a particular anode dissipation are indicated on the cooling curves.

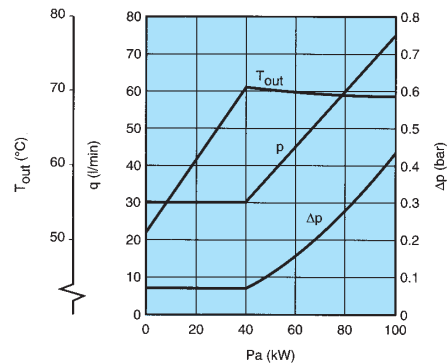
Pa: anode dissipation
 Δp : pressure drop across the water cooler
 q: water flow rate
 T_{out} : outlet water temperature

(for an inlet water temperature of 20°C with industrial water and 50°C with distilled or deionized water).

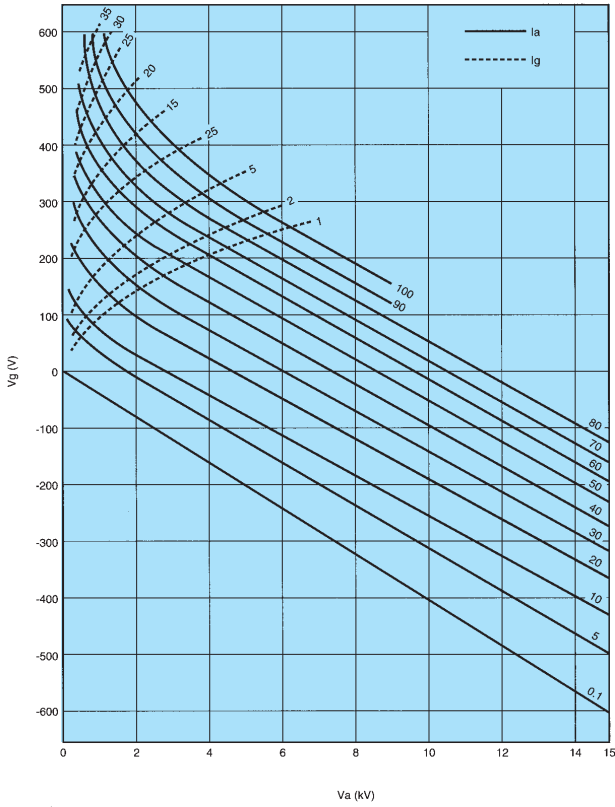
**Industrial water -
minimum resistivity: 5 k Ω .cm**



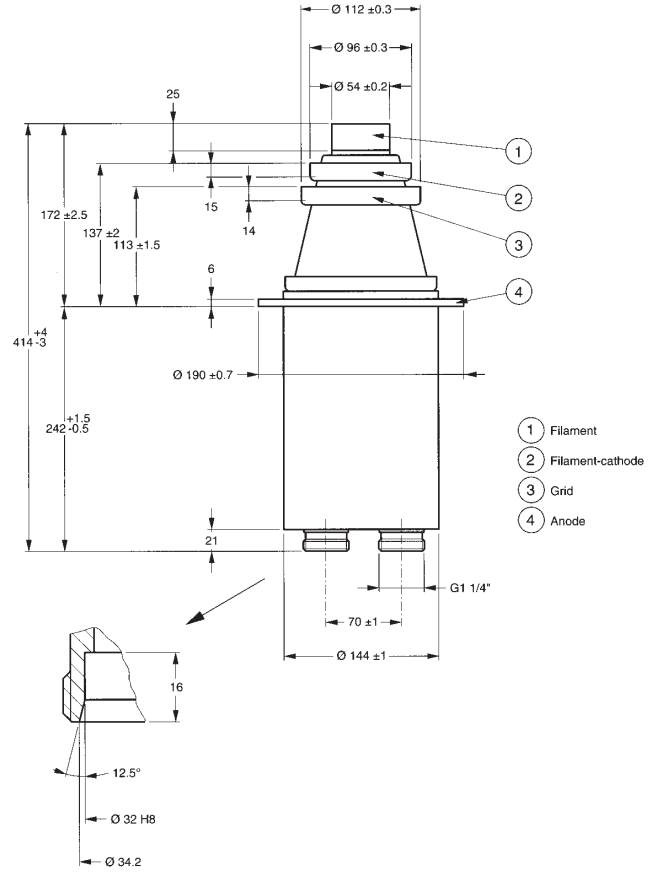
**Distilled or deionized water -
minimum resistivity: 50 k Ω .cm**



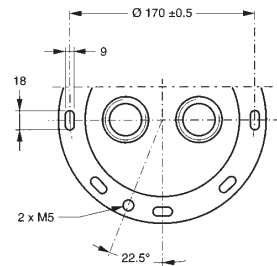
Constant current characteristics



Outline drawing (dimensions in mm)



Top view (dimensions in mm)



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For further information, please contact:

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