

# ITK 30-2

Water cooled triode

**130 kW**

- Output power:  
130 kW in CW mode
- Anode voltage: 14 kV
- Anode dissipation: 50 kW
- Frequency up to 100 MHz



**THALES**



ITK 30-2

The ITK 30-2 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 30-2 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)	11	V	
Filament current	240	A	
Surge current	900	A	max.
Cold resistance	5	mΩ	
Capacitances:			
• grid-anode	49	pF	
• grid-cathode	98	pF	
• cathode-anode (2)	2.5	pF	
Amplification factor	23		approx.
Transconductance (Va: 3 kV, Ia: 6 A)	95	mA/V	approx.

### Mechanical characteristics

Operating position	vertical, anode up or down		
Weight	10.3	kg	approx.
Dimensions	see outline drawing		

### Maximum ratings

Frequency (3)	100	MHz
Anode voltage:		
• up to 30 MHz	14	kV
• from 30 to 70 MHz	12	kV
• from 70 to 100 MHz	10	kV
Control grid voltage	- 1 500	V
Anode current, CW	16	A
Control grid current:		
• at full load, CW	3	A
• at no load, CW	5	A
Peak cathode current, CW	90	A
Anode dissipation:		
• industrial cooling water	40	kW
• distilled or deionized water	50	kW
Grid dissipation:		
• up to 30 MHz	1.2	kW
• from 30 to 70 MHz	1.05	kW
• from 70 to 120 MHz	0.9	kW
Grid resistance (tube non conducting)	10	KΩ

(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 30 MHz. Please consult Thales Electron Devices.

## Cooling

Anode cooling	water		
Cooling water flow and pressure gradient	see cooling curves		
Temperature at outlet (industrial water)	60	°C	max.
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 <sup>3</sup> /min.	

## Typical operation (4)

Examples	Class C RF oscillator for industrial applications		
	1	2	
Frequency	30	30	MHz
Anode voltage	12	10	kV
Grid bias	- 795	- 685	V
Grid voltage	1 265	1 145	V
Anode current	14.4	12.6	A
Grid current, on load	2.2	2.2	A
Anode input power	173	126	kW
Anode output power	132	96	kW
Anode dissipation	39	28	kW
Grid dissipation	890	885	W
Grid resistor	360	310	Ω
Feedback ratio	11.7	11.5	%
Oscillator efficiency	76	75.8	%

(4) Operation with higher frequencies on request.

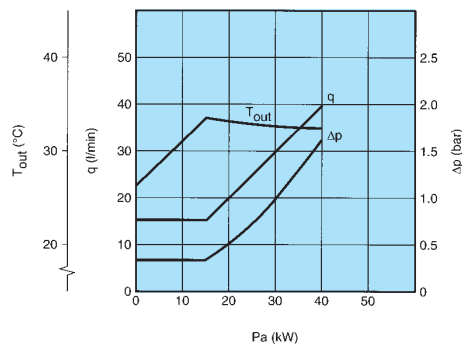
## Cooling curves

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.

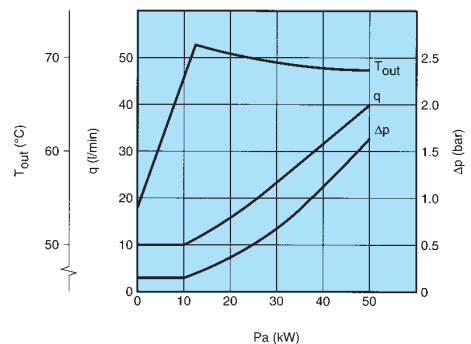
Pa: anode dissipation  
 $\Delta p$ : pressure drop across the water cooler  
 $q$ : water flow rate  
 $T_{out}$ : outlet water temperature

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

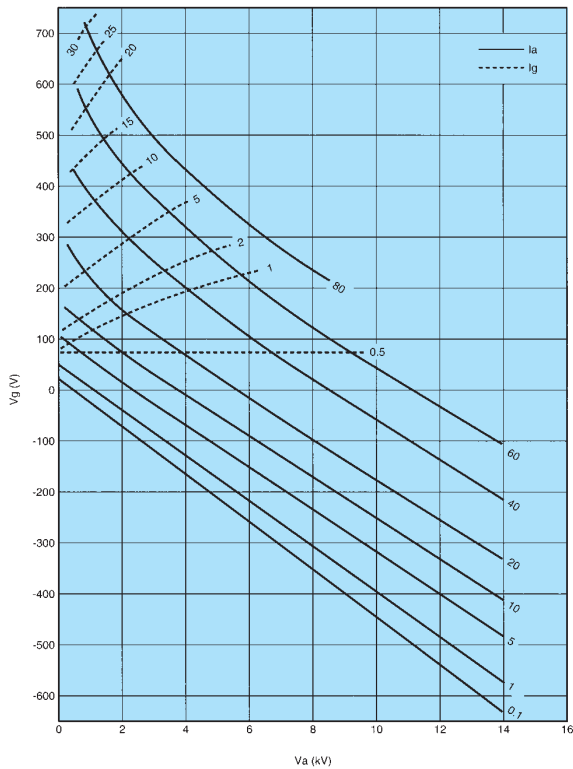
### Industrial water - minimum resistivity: 5 kΩ.cm



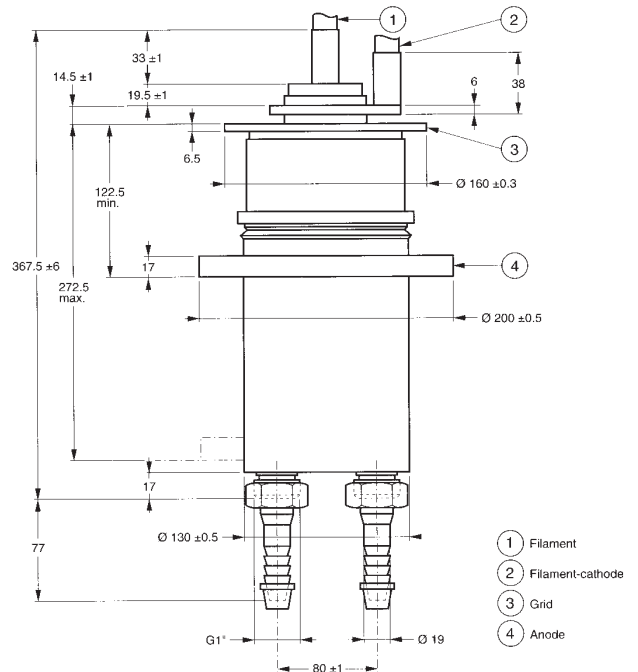
### Distilled or deionized water - minimum resistivity: 50 kΩ.cm



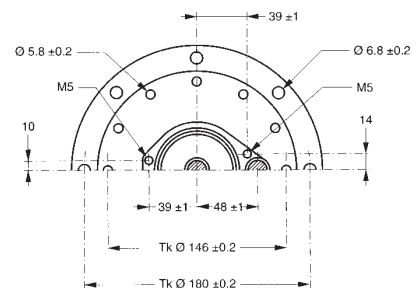
## Constant current characteristics



## Outline drawing (dimensions in mm)



## Top view (dimensions in mm)



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For further information, please contact:

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