

WATER COOLED INDUSTRIAL R.F. POWER TRIODE WITH INTEGRAL HELICAL COOLER

QUICK REFERENCE DATA		
Industrial R.F. oscillator class C		
Freq. (MHz)	Three phase	
	V_a (kV)	W_o (kW)
30	12	29.0
	10	23.3
	8	17.9

HEATING: direct; filament thoriated tungsten

Filament voltage	V_f	=	8.0 V $\begin{smallmatrix} +5\% \\ -10\% \end{smallmatrix}$
Filament current	I_f	=	98 A
Cold filament resistance	R_f	=	0.008 Ω

The filament current must never exceed a peak value of 210 A instantaneously at any time during the initial energizing schedule

CAPACITANCES

Anode to all other elements except grid	C_a	=	0.4 pF
Grid to all other elements except anode	C_g	=	37 pF
Anode to grid	C_{ag}	=	30 pF

TYPICAL CHARACTERISTICS

Anode voltage	V_a	=	12 kV
Anode current	I_a	=	2 A
Amplification factor	μ	=	34
Mutual conductance	S	=	20 mA/V

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TEMPERATURE LIMITS (Absolute limits)

Water inlet temperature $t_i = \text{max. } 50^\circ\text{C}$

Temperature off all seals $= \text{max. } 220^\circ\text{C}$

WATER COOLING CHARACTERISTICS

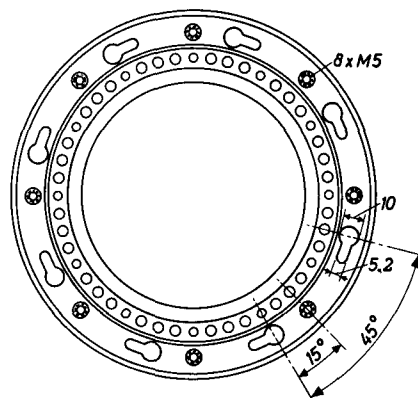
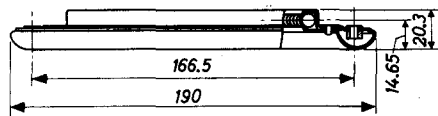
W_a (kW)	t_i ($^\circ\text{C}$)	q_{min} (l/min)	P_i (atm.)
10	20	4.2	0.08
	50	8.4	0.27
15	20	6.5	0.16
	50	13.0	0.50
20	20	9.3	0.30
	50	18.6	1.0

At water inlet temperatures between 20°C and 50°C the required quantity of water can be found by linear interpolation

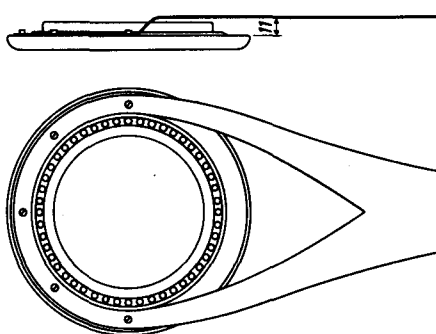
Generally a low velocity air flow to the seals is required

MECHANICAL DATA

Dimensions in mm



Grid connector 40663



Connection of the grid lead

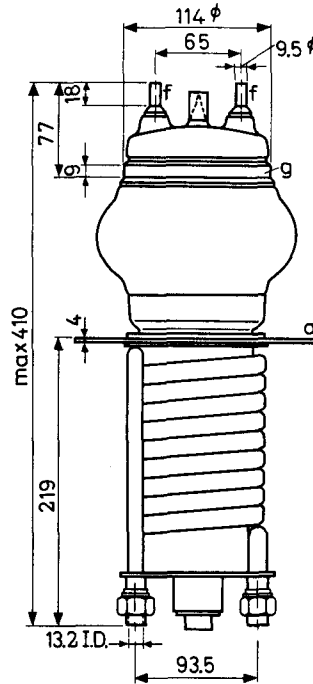
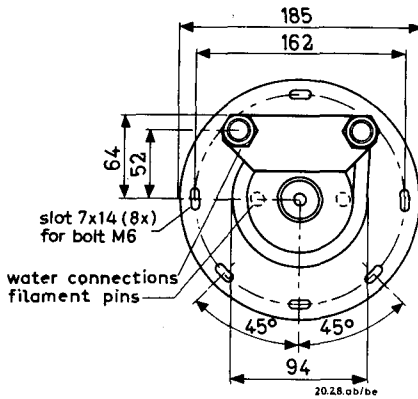
The rounded side of the grid connector should face the anode. To ensure a uniform R.F. current distribution in the grid seal at frequencies higher than 4 MHz, the grid lead should be connected as shown at right.

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MECHANICAL DATA (continued)

Filament connectors with cable	40662
Grid connector	40663
Net weight	5.2 kg

Dimensions in mm



Mounting position: vertical with anode down

R.F. CLASS C OSCILLATOR FOR INDUSTRIAL USE with anode voltage from three-phase half-wave rectifier without filter

LIMITING VALUES (Absolute limits)

Frequency	f	up to	30	MHz
Anode voltage	V_a	= max.	13	kV
Anode current	I_a	= max.	4.8	A
Anode dissipation	W_a	= max.	20	kW
Anode input power	W_{ia}	= max.	60	kW
Negative grid voltage	$-V_g$	= max.	1500	V
Grid current	I_g	= max.	0.8	A
Grid circuit resistance	R_g	= max.	10	k Ω

OPERATING CONDITIONS

Frequency	f	=	30	30	30	MHz
Transformer voltage	V_{tr}	=	8.9	7.4	6.0	kV
Anode voltage	V_a	=	12	10	8	kV
Anode current, loaded	I_a	=	3.2	3.2	3.2	A
Anode current, unloaded	I_a	=	0.52	0.50	0.48	A
Grid current, loaded	I_g	=	0.50	0.50	0.50	A
Grid current, unloaded	I_g	=	0.74	0.77	0.80	A
Grid resistor	R_g	=	2.0	1.6	1.1	k Ω
Load resistance	$R_{a\sim}$	=	1800	1450	1100	Ω
Feedback ratio under loaded conditions	$V_{g\sim}/V_{a\sim}$	=	16	17	19	%
Anode input power	W_{ia}	=	38.4	32.0	25.6	kW
Anode dissipation	W_a	=	9.4	8.7	7.7	kW
Output power	W_o	=	29.0	23.3	17.9	kW
Efficiency	η	=	75.5	72.5	70	%
Output power in the load	W_p	=	25	20	15.5	kW ¹⁾

¹⁾ Useful power in the load measured in a circuit having an efficiency of 90%

