

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

QUICK REFERENCE DATA		
Freq. (MHz)	C osc. industrial	
	V _a (kV)	W _o (kW)
30	12	39
	10	31.3
	8	23.2

HEATING: direct; filament thoriated tungsten

Filament voltage	$V_f = 8 \text{ V} \begin{matrix} + 5 \% \\ -10 \% \end{matrix}$
Filament current	$I_f = 130 \text{ A}$
Cold filament resistance	$R_f = 0.006 \ \Omega$

The filament current must never exceed a peak value of 280 A at any time during the initial energizing schedule

CAPACITANCES

Anode to all other elements except grid	$C_a = 0.9 \text{ pF}$
Grid to all other elements except anode	$C_g = 45 \text{ pF}$
Anode to grid	$C_{ag} = 23.5 \text{ pF}$

TYPICAL CHARACTERISTICS

Anode voltage	$V_a = 12 \text{ kV}$
Anode current	$I_a = 2 \text{ A}$
Amplification factor	$\mu = 21$
Mutual conductance	$S = 25 \text{ mA/V}$

TEMPERATURE LIMITS (Absolute limits)

Temperature of all seals	= max. 220 °C	
Water inlet temperature t_i	= max. 50 °C	

7Z2 8649

COOLING: Generally a low velocity air flow to the seals is required

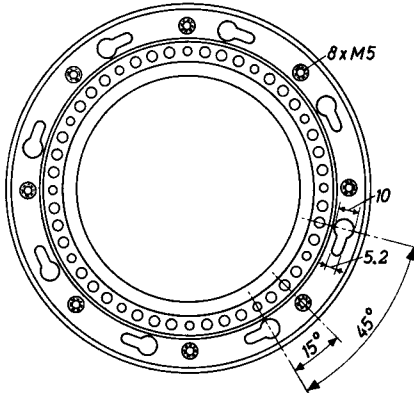
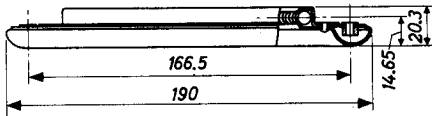
WATER COOLING CHARACTERISTICS

W_a (kW)	t_i (°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	0.5
20	20	9.3	0.3
	50	18.6	1.0

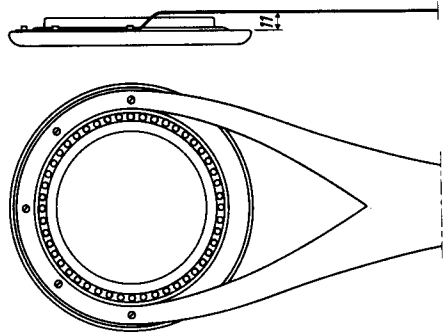
At water inlet temperatures between 20 °C and 50 °C the required quantity of water can be found by linear interpolation

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 RF current distribution in the grid seal at frequencies higher than 4 MHz, the grid lead should be connected as shown in the figure at right.

R.F. CLASS C OSCILLATOR FOR INDUSTRIAL USE with anode voltage from three-phase 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.	5	A
Anode dissipation	W_a	= max.	20	kW
Anode input power	W_{ia}	= max.	60	kW
Negative grid voltage	$-V_g$	= max.	2	kV
Grid current, loaded	I_g	= max.	1.5	A
Grid current, unloaded	I_g	= max.	2.0	A
Grid circuit resistance	R_g	= max.	10	k Ω

OPERATING CONDITIONS

Frequency	f	=	30	30	30	MHz
Anode voltage	V_a	=	12	10	8	kV
Anode current, loaded	I_a	=	4.5	4.5	4.5	A
Anode current, unloaded	I_a	=	0.65	0.63	0.62	A
Grid current, loaded	I_g	=	0.9	0.9	0.9	A
Grid current, unloaded	I_g	=	1.22	1.3	1.35	A
Grid resistor	R_g	=	1100	1000	900	Ω
Load resistance	$R_{a\sim}$	=	1450	1100	800	Ω
Feedback ratio under loaded conditions	$V_{g\sim}/V_{a\sim}$	=	16	19	24	%
Anode input power	W_{ia}	=	54	45	36	kW
Anode dissipation	W_a	=	15	13.7	12.8	kW
Output power	W_o	=	39	31.3	23.2	kW
Efficiency	η	=	72.5	70	64.5	%
Output power in the load	W_l	=	30	25	18	kW ¹⁾

1) Useful power in the load, measured in a circuit having an efficiency of about 85%. 7Z2 3565

