

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

<b>QUICK REFERENCE DATA</b>		
Industrial R.F. oscillator class C		
Freq. (MHz)	Three phase	
	V <sub>a</sub> (kV)	W <sub>o</sub> (kW)
30	12	29.0
	10	23.3
	8	17.9

**HEATING:** direct; filament thoriated tungsten

Filament voltage	V <sub>f</sub>	=	8.0 V	+ 5%	-10%
Filament current	I <sub>f</sub>	=	98 A		
Cold filament resistance	R <sub>f</sub>	=	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 <sub>a</sub>	=	0.4 pF
Grid to all other elements except anode	C <sub>g</sub>	=	37 pF
Anode to grid	C <sub>ag</sub>	=	30 pF

### TYPICAL CHARACTERISTICS

Anode voltage	V <sub>a</sub>	=	12 kV
Anode current	I <sub>a</sub>	=	2 A
Amplification factor	μ	=	34
Mutual conductance	S	=	20 mA/V

7Z2 8647

**TEMPERATURE LIMITS** (Absolute limits)

Water inlet temperature  $t_i = \text{max. } 50 \text{ }^\circ\text{C}$   
 Temperature off all seals  $= \text{max. } 220 \text{ }^\circ\text{C}$

**WATER COOLING CHARACTERISTICS**

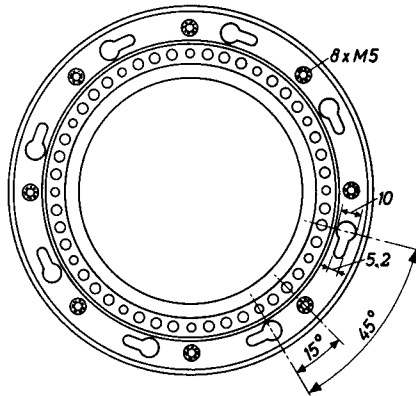
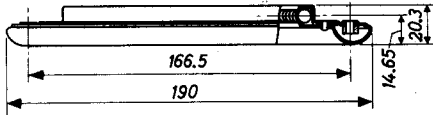
$W_a$ (kW)	$t_i$ ( $^\circ\text{C}$ )	$q_{\text{min}}$ (l/min)	$P_i$ (atm.)
10	20	4.2	0.08
	50	8.4	0.27
15	20	6.5	0.16
	50	13.0	0.50
20	20	9.3	0.30
	50	18.6	1.0

At water inlet temperatures between  $20 \text{ }^\circ\text{C}$  and  $50 \text{ }^\circ\text{C}$  the required quantity of water can be found by linear interpolation

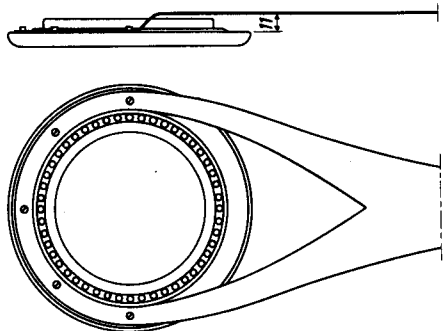
Generally a low velocity air flow to the seals is required

**MECHANICAL DATA**

Dimensions in mm



Grid connector 40663



Connection of the grid lead

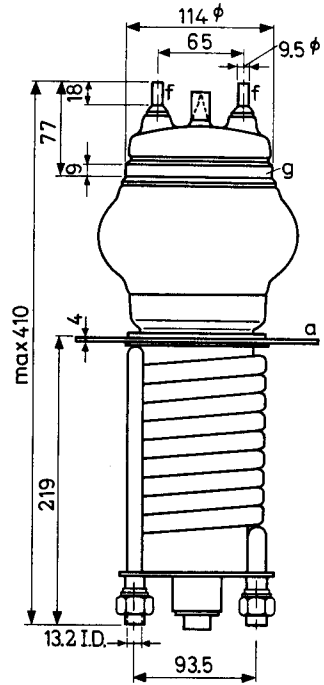
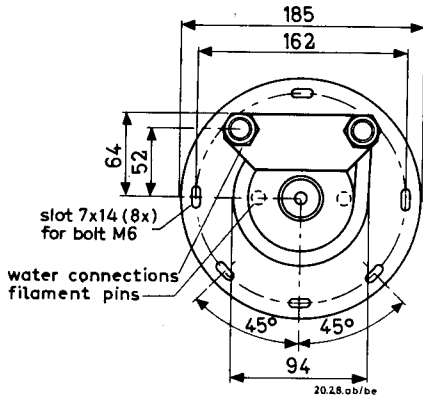
The rounded side of the grid connector should face the anode. To ensure a uniform R.F. current distribution in the grid seal at frequencies higher than 4 MHz, the grid lead should be connected as shown at right.

7Z2 3556

**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 $\Omega$

**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 $\Omega$
Load resistance	$R_{a\sim}$	=	1800	1450	1100	$\Omega$
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	$\eta$	=	75.5	72.5	70	%
Output power in the load	$W_p$	=	25	20	15.5	kW <sup>1)</sup>

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

