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

Water cooled triode with integral helical cooler intended for use as an industrial oscillator

QUICK REFERENCE DATA			
Oscillator output power (W_o -W_{feedb})	W_{osc}	6	kW
Frequency for full ratings	f max.	55	MHz

To be read in conjunction with "General Recommendations Transmitting tubes, Tubes for R.F. heating"

R.F. CLASS C OSCILLATOR FOR INDUSTRIAL USE *

OPERATING CONDITIONS

Frequency	f	50	MHz
Oscillator output power (W_o - W_{feedb})	W_{osc}	6	kW
Transformer voltage, RMS	V_{tr}	5,1	kV
Anode voltage	V_a	6	kV
Anode current	I_a	1,5	A
Anode input power	W_{ia}	9	kW
Anode dissipation	W_a	2,7	kW
Anode output power	W_o	6,3	kW
Anode efficiency	η_a	70	%
Oscillator efficiency	η_{osc}	67	%
Grid current, on load	I_g	0,4	A
Grid input power	W_{ig}	300	W

* With anode voltage from three-phase half-wave rectifier without filter.

LIMITING VALUES (Absolute max. rating system)

Frequency	f	up to	55	MHz
Anode voltage	V_a	max.	7	kV
Anode current	I_a	max.	1,8	A
Anode input power	W_{ia}	max.	11	kW
Anode dissipation	W_a	max.	6	kW
Grid voltage	$-V_g$	max.	1250	V
Grid current, on load	I_g	max.	0,5	A
off load	I_g	max.	0,7	A
Grid resistor	R_g	max.	10	kΩ
Temperature of filament seals	T	max.	210	°C
Temperature of anode and grid seals	T	max.	180	°C

HEATING: direct; filament thoriated tungsten

Filament voltage	V_f	12,6	V
Filament current	I_f	33	A

The filament is designed to accept temporary fluctuations of +5% and −10%.

CAPACITANCES

Anode to all other elements except grid	C_a	0,3	pF
Grid to all other elements except anode	C_g	16	pF
Anode to grid	C_{ag}	11	pF

CHARACTERISTICS measured at V_a = 6 kV, I_a = 1 A

Transconductance	S	15	mA/V
Amplification factor	μ	32	

COOLING

W_a (kW)	T_i (°C)	q_{min} (l/min)	p_i (atm)	T_o (°C)
2	20	1,5	0,06	44
	50	3	0,22	62
4	20	3	0,22	42
	50	6	0,73	61
6	20	5	0,54	39
	50	10	1,8	59

Absolute max. water inlet temperature T_i max. 50 °C

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

In general no air cooling will be required at frequencies up to 30 MHz and at ambient temperatures below 35 °C. At higher temperatures or at higher frequencies a low velocity air flow to the grid and filament seals will be necessary.

ACCESSORIES

Filament connectors	type	**40634**	
Connector for centre pin of the filament		40649	
Grid connector	40650	or	40622

The centre filament pin f_c must not be used for filament current supply. The connector type 40649 should, however, be used for cooling of this pin.

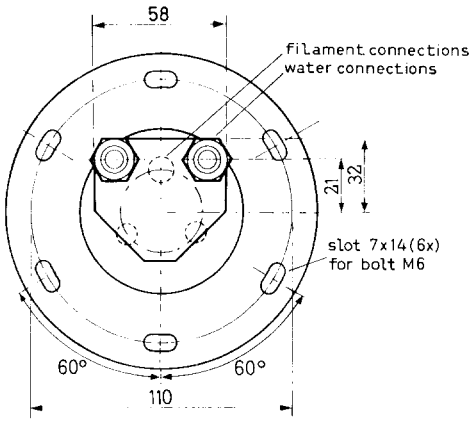
The grid connector type 40650 must not be used at frequencies higher than 30 MHz.

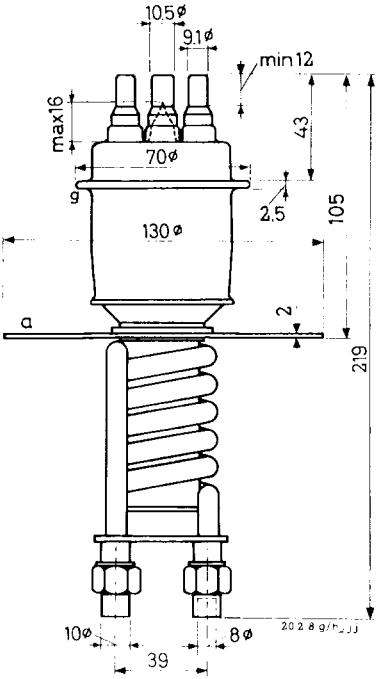
MECHANICAL DATA

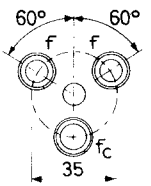
Dimensions in mm

Mounting position: vertical with anode down

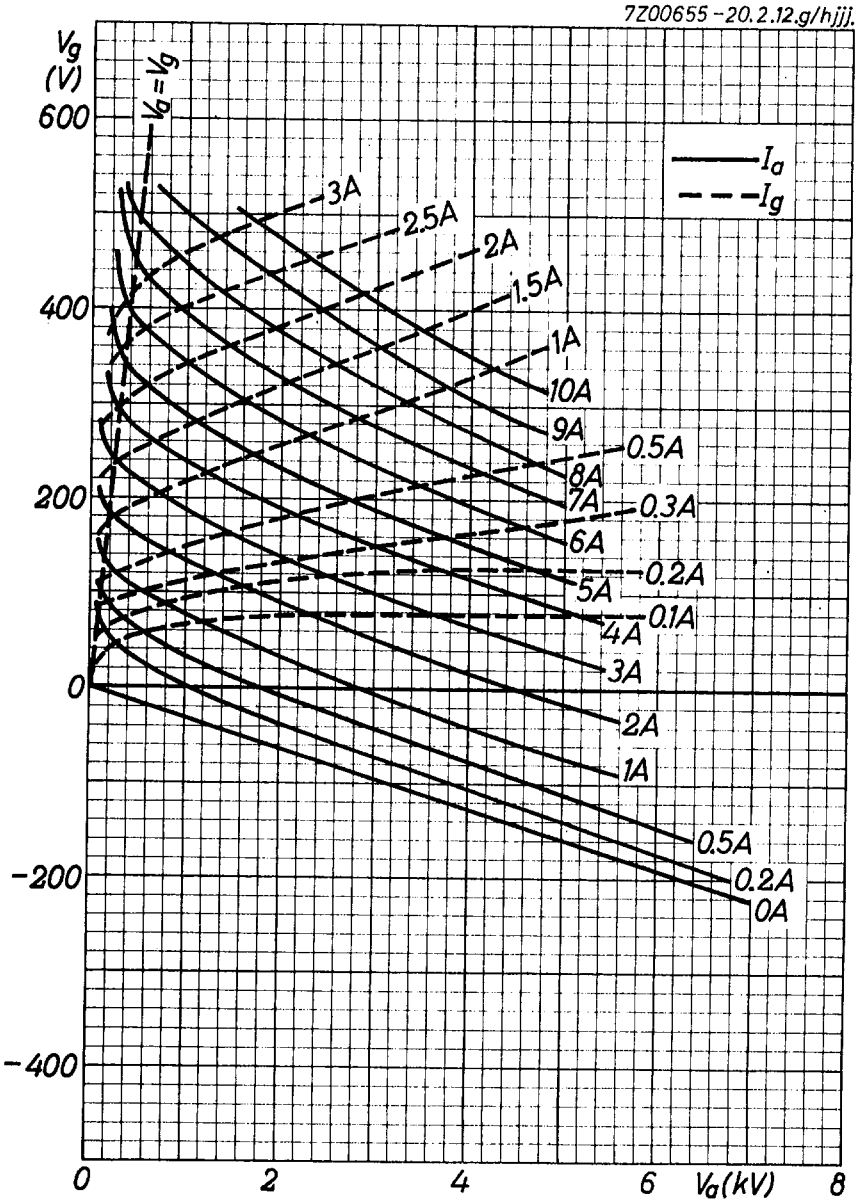
Net mass : approx. 0,8 kg







The use of wing nuts for the water connections should be avoided.


7Z00655 -20.2.12.g/hjjj.
Vg (V)
600
400
200
0
-200
-400
Va=Vg
3A
2.5A
2A
1.5A
1A
10A
9A
8A
7A
6A
5A
4A
3A
2A
1A
0.5A
0.3A
0.2A
0.1A
0.5A
0.2A
0A
Ia
Ig
0
2
4
6
8
Va(kV)