

RF POWER TRIODE

- Air cooled

QUICK REFERENCE DATA

Industrial RF oscillator, class-C

freq.	three phase	
MHz	V_a kV	W_o kW
30	7	17,7
	6	14,3

HEATING: direct; thoriated tungsten filament

Filament voltage	V_f	=	6,3 V
Filament current	I_f	=	136 A
Cold filament resistance	R_{fo}	=	0,005 Ω

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

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	=	1,2 pF
Grid to all other elements except anode	C_g	=	44,5 pF
Anode to grid	C_{ag}	=	33,5 pF

TYPICAL CHARACTERISTICS

Anode voltage	V_a	=	6 kV
Anode current	I_a	=	2,5 A
Mutual conductance	S	=	23 mA/V
Amplification factor	μ	=	17,5

TEMPERATURE LIMIT (Absolute limit)

Temperature of all seals	max.	220 $^{\circ}\text{C}$
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Table 1 Cooling

anode dissipation W_a kW	altitude h m	inlet temperature T_i °C	rate of flow q_{min} m ³ /min	pressure drop ΔP Pa*	outlet-temperature T_o max °C
10	0	35	11	500	90
7,5	0	35	8,0	270	90
5	0	35	5,2	120	95
10	0	45	12,3	630	95
7,5	0	45	9,0	340	95
5	0	45	5,9	150	100
10	1500	35	13	590	90
7,5	1500	35	9,5	320	90
5	1500	35	6,2	140	95
10	3000	25	14	640	85
7,5	3000	25	10,2	340	85
5	3000	25	6,6	150	90

ACCESSORIES

Filament connectors with cable	40662	
Grid connector	40664	
Insulating pedestal or air distributor	K509	K508

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 below.

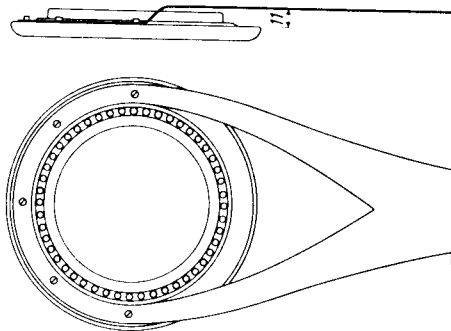
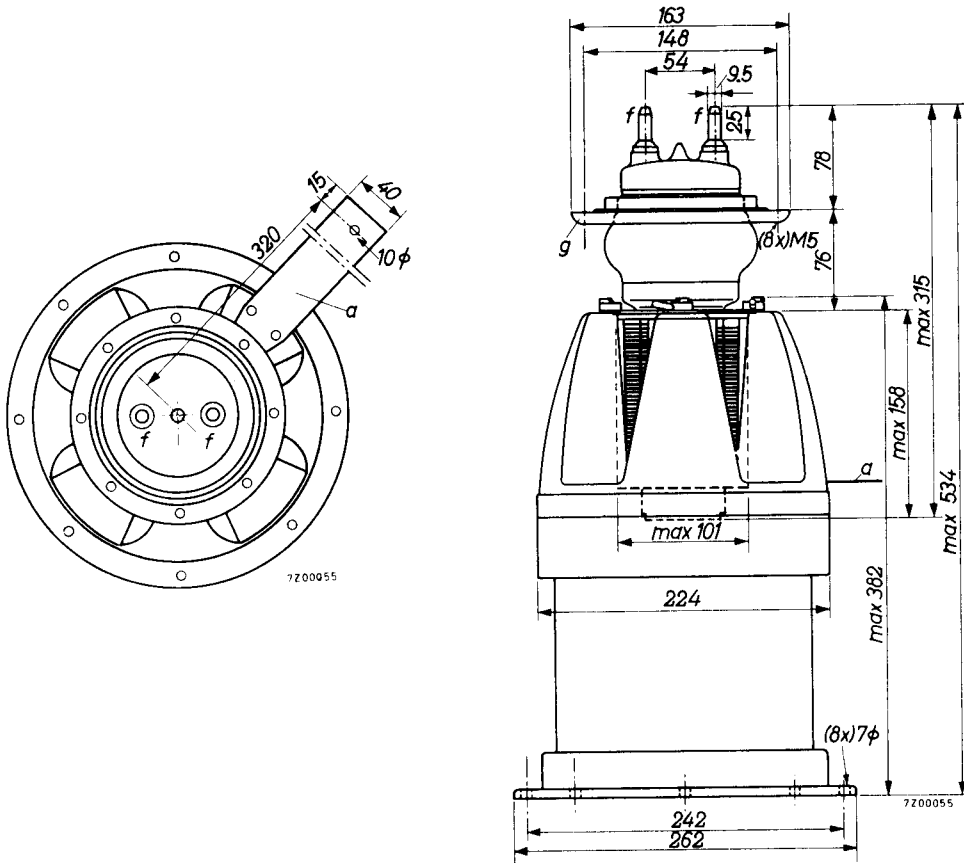


Fig. 1 Connection of the grid lead.

* 1 Pa \approx 0,1 mm H₂O.

MECHANICAL DATA

Dimensions in mm



Mounting position : vertical with anode down
 Net mass of tube : 3,8 kg
 Net mass of pedestal : 7,4 kg

Fig. 2 Mechanical outline.

RF CLASS-C OSCILLATOR FOR INDUSTRIAL USE with anode voltage from three-phase rectifier
without filter

LIMITING VALUES (Absolute maximum rating system)

Frequency	f	up to	30	MHz
Anode voltage	V_a	max.	8	kV
Anode input power	W_{ia}	max.	30	kW
Anode dissipation (See page 106)	W_a	max.	10*	kW
Anode current	I_a	max.	4,0	A
Negative grid voltage	$-V_g$	max.	1600	V
Grid current, on load	I_g	max.	1,5	A
Grid current, off load	I_g	max.	2,0	A
Grid circuit resistance	R_g	max.	10	k Ω

OPERATING CONDITIONS

Frequency	f	30	30	MHz
Anode voltage	V_a	7	6	kV
Anode current, on load	I_a	3,5	3,3	A
Anode current, off load	I_a	0,7	0,51	A
Grid current, on load	I_g	0,95	0,8	A
Grid current, off load	I_g	1,35	1,1	A
Grid resistor	R_g	950	1000	Ω
Load resistance	$R_{a\sim}$	1000	870	Ω
Feedback ratio under loaded conditions	$V_{g\sim}/V_{a\sim}$	25	26	%
Anode input power	W_{ia}	24,5	19,8	kW
Anode dissipation	W_a	6,8	5,5	kW
Output power	W_o	17,7	14,3	kW
Efficiency	η	72	72	%
Output power in the load **	W_ℓ	14	11	kW

* TBW6/14: $W_a \max = 15$ kW

** Useful power in the load, measured in a circuit having an efficiency of approx. 85%.

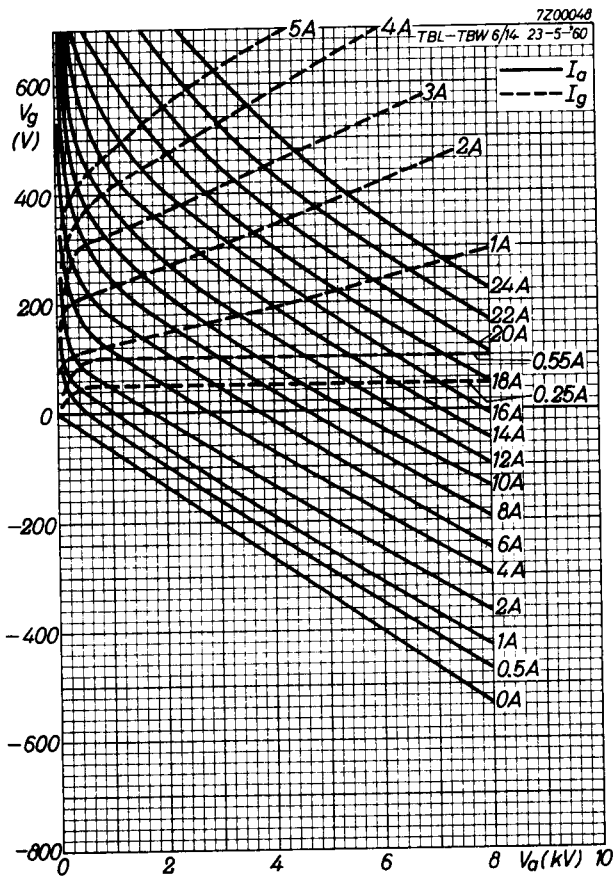
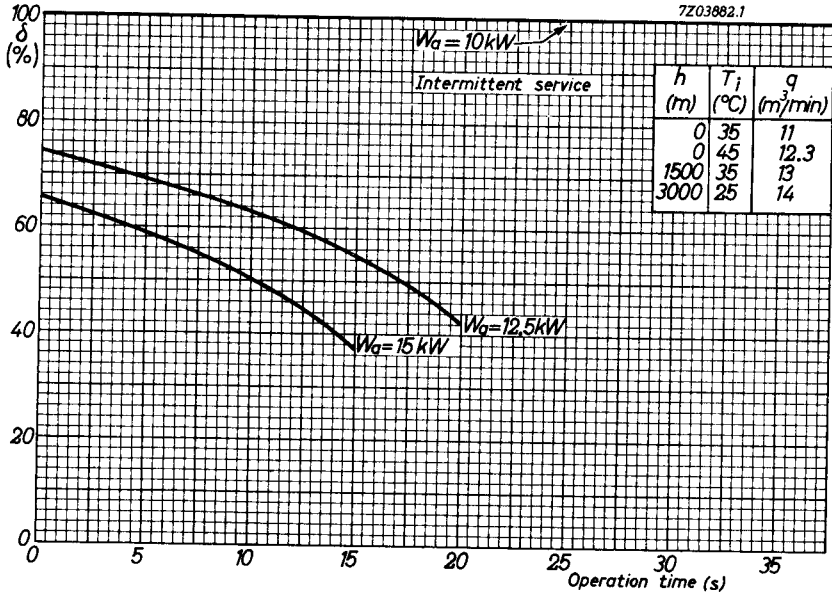
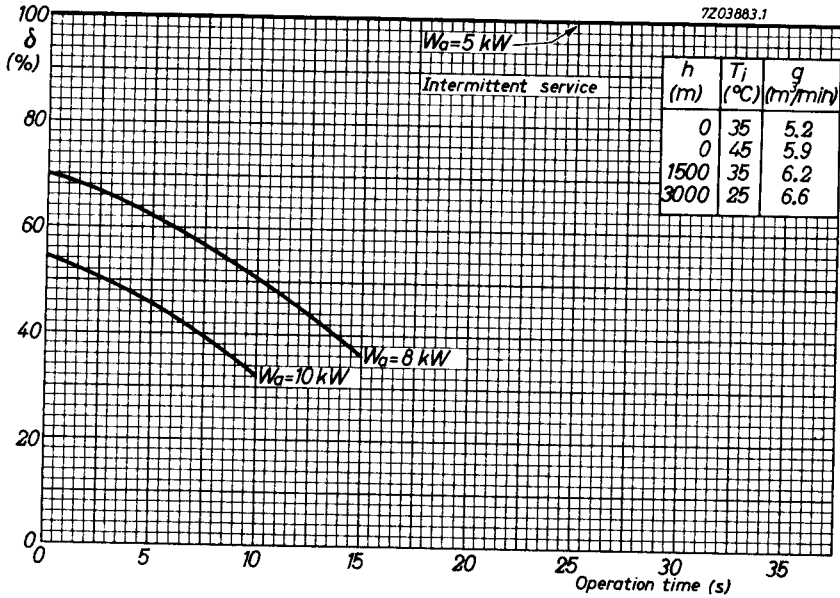


Fig. 3 Constant current characteristics.

Fig. 4 Intermittent service. Limits of anode dissipation and cooling.



(a) For cooling see 10 kW continuous service.



(b) For cooling see 5 kW continuous service.

PHILIPS

Data handbook



Electronic
components
and materials

TBL6/14

page	sheet	date
1	105	1988.02
2	106	1988.02
3	107	1988.02
4	108	1988.02
5	109	1988.02
6	110	1988.02
7	FP	2000.09.22