

RF POWER TRIODE

- Air cooled

QUICK REFERENCE DATA

Industrial RF oscillator, class-C

freq.	three phase	
MHZ	V_a kV	W_o kW
30	12	29,0
	10	23,3
	8	17,9

HEATING: direct; thoriated tungsten filament

Filament voltage	V_f	=	8,0 V
Filament current	I_f	=	98 A
Cold filament resistance	R_{fo}	=	0,008 Ω

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

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
Mutual conductance	S	=	20 mA/V
Amplification factor	μ	=	34

TEMPERATURE LIMIT (Absolute limit)

Seal temperature	max.	220 $^{\circ}\text{C}$
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Table 1 Air cooling characteristics

W_a (kW)	h (m)	T_i (°C)	q_{min} (m ³ /min)	ΔP (Pa)*	max. outlet temperature T_o (°C)
7	0	35	6.6	100	100
	0	45	7.7	130	100
	1500	35	7.9	120	100
	3000	25	8.3	120	95
	0	35	10.5	230	90
10	0	45	12.3	310	90
	1500	35	12.6	280	90
	3000	25	13.2	270	85
	0	35	18.1	600	80
	0	45	21.2	790	80
15	1500	35	21.7	730	80
	3000	25	22.8	700	75

To ensure a uniform RF current distribution in the grid seal especially at frequencies higher than 4 MHz, the grid lead should be connected as shown below

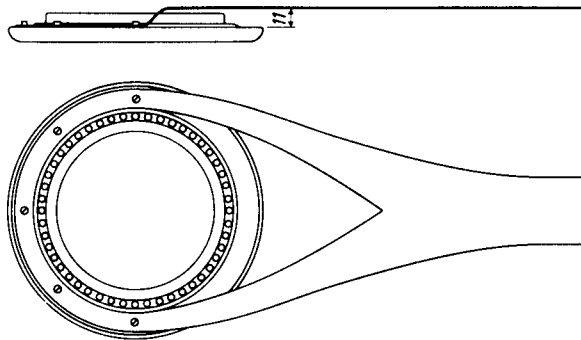


Fig. 1 Grid lead detail.

* 1 Pa \approx 0,1 mm H₂O.

MECHANICAL DATA

Dimensions in mm

Net mass of tube 17,3 kg

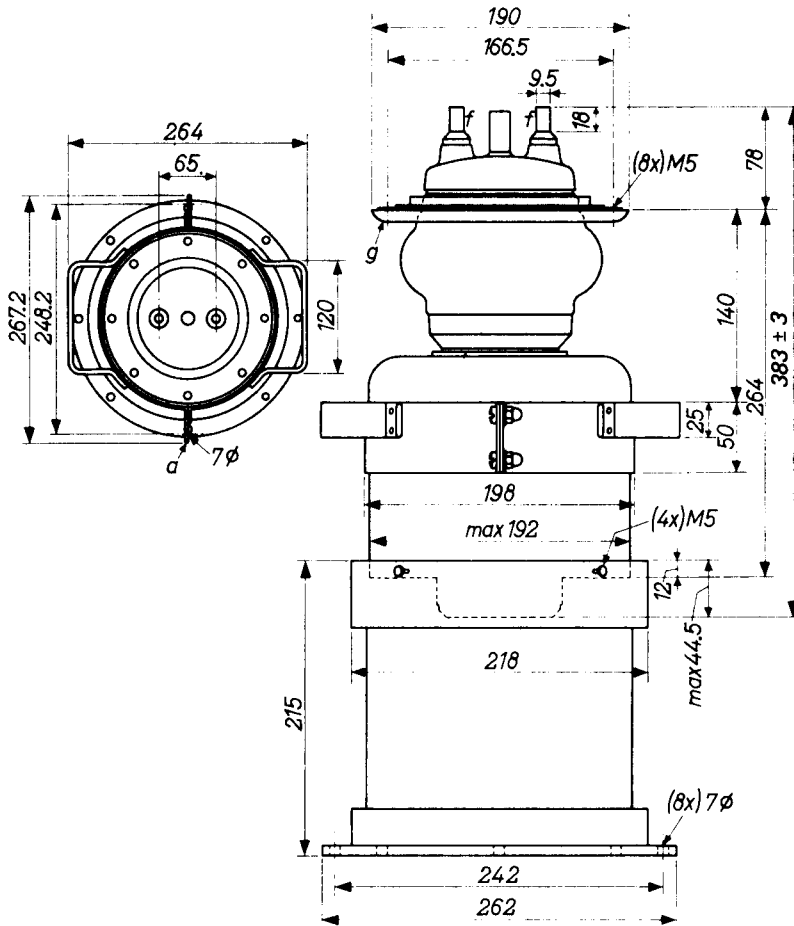


Fig. 2 Mechanical outline.

Mounting position: vertical with anode down

ACCESSORIES

Filament connectors, with cable	40662
Grid connector	40663
Insulating pedestal	40648

RF 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.	15	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_l	=	25	20	15.5	kW ¹⁾

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

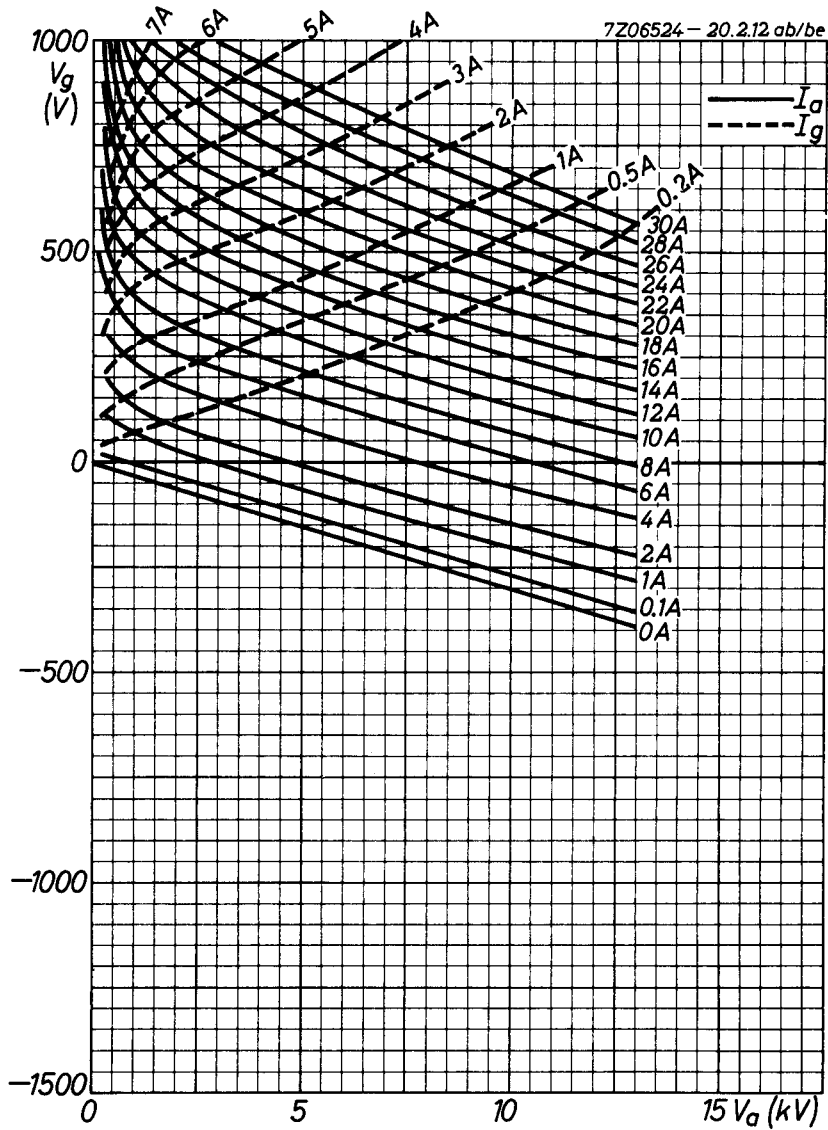


Fig. 3 Constant current characteristics.

PHILIPS

Data handbook



Electronic
components
and materials

TBL12/25

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