Amperex

7805/TBW6/14
RF Power Triode

Water Cooled
QUICK REFERENCE DATA

Industrial RF oscillator, class-C

freq.	three phase		
	V_a		W_o
MHz	kV		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

Output	C_a	=	1.2	pF
Input	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)

Seal temperature	max.	220	°C
Water inlet temperature	max.	50	°C

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Table 1 Cooling Temperature

anode dissipation Wa (kW)	inlet temperature Ti (°C)	rate of flow qmin ℓ/min	pressure drop P (KPa)*	outlet temperature To (°C)
15	20	15	30	35
	50	34	140	60
10	20	9.5	15	37
	50	22	60	57
5	20	4.5	3	40
	50	12	20	60

*100KPa=1at

ACCESSORIES

Filament clips with cable	40662
Grid connector	40664
Water Jacket	K720
O-ring, large	2622 080 30889
small	2622 080 30736

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 4MHz, the grid lead should be connected as shown above.
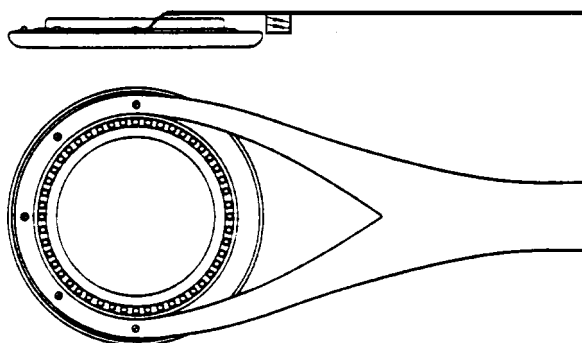

Fig. 1 Grid lead detail

Review the operating hazards sheet enclosed in each tube's carton or request a copy from:
Richardson Electronics, Ltd. 40W267 Keslinger Rd., LaFox, IL 60147.

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.	8	kV
Anode current	I_a	=	max.	4.0	A
Anode dissipation	W_a	=	max.	15	kW
Anode input power	W_{ia}	=	max.	30	kW
Negative grid voltage	$-V_g$	=	max.	1600	V
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	kΩ

OPERATING CONDITIONS

Frequency	f	=	30	30	MHz
Anode voltage	V_a	=	7	6	kV
Anode current, loaded	I_a	=	3.5	3.3	A
Anode current, unloaded	I_a	=	0.7	0.51	A
Grid current, loaded	I_g	=	0.95	0.8	A
Grid current, unloaded	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	N	=	72	72	%
Output power in					
the load *	W_l	=	14	11	kW

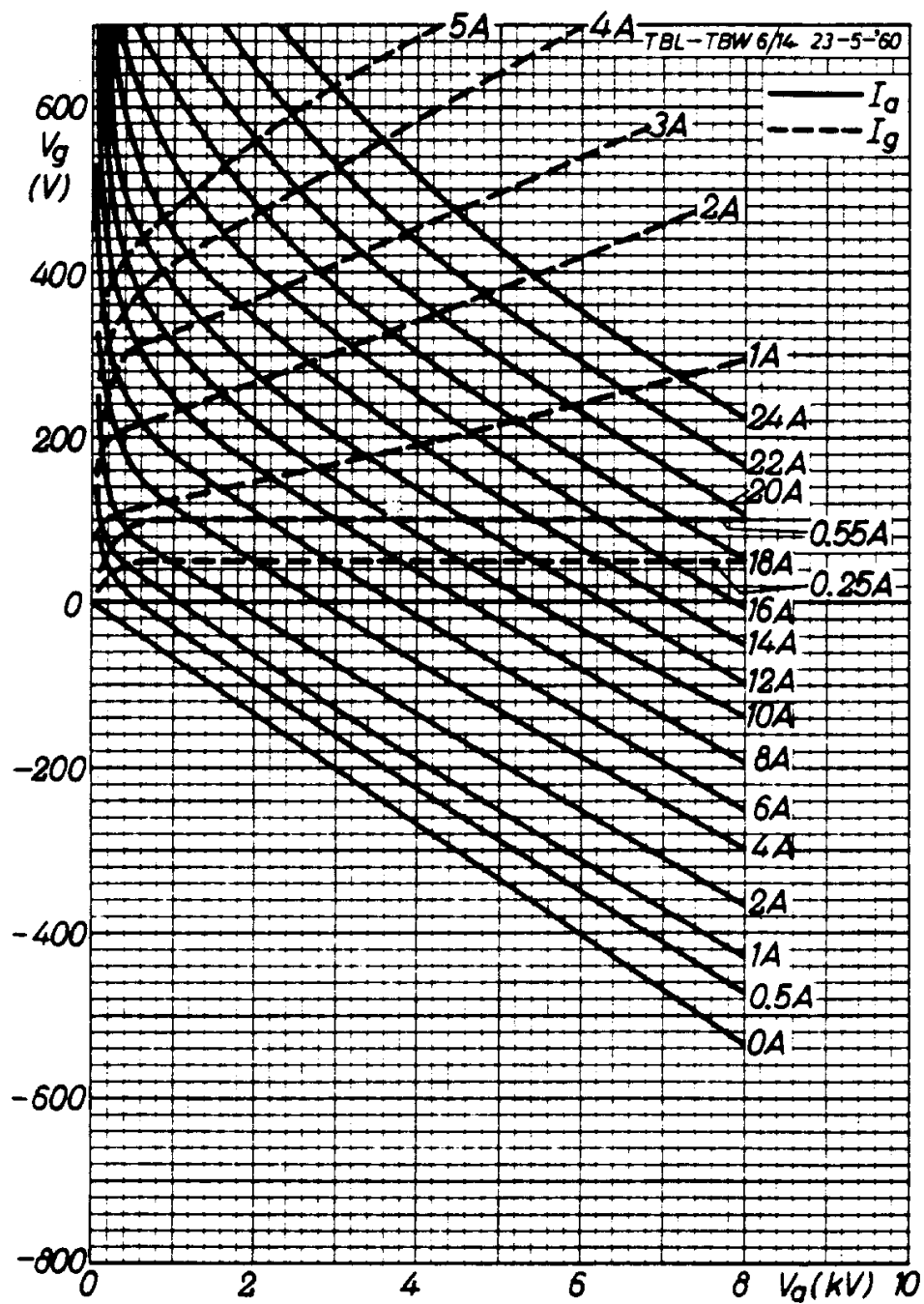*Useful power in the load, measured in a circuit having an efficiency of approx. 85%.

Fig. 2 Constant Current Characteristics

Mechanical Outline
Dimensions in mm
Fig. 3 Mechanical Outline
Tube with water jacket and grid connector

Accessories:
Mouting position: vertical with anode down
Net mass of tube: 2 kg
Net mass of water jacket: 2.2 kg