

VAPOUR COOLED R.F. POWER TRIODE

QUICK REFERENCE DATA								
Frequency (MHz)	C telegraphy		C anode mod.		B telephony		AF class B Two tubes	
	V_a (kV)	W_o (kW)	V_a (kV)	W_o (kW)	V_a (kV)	W_o (kW)	V_a (kV)	W_o (kW)
10	15	360					12	450
30	12	285	11	165	10	60	10	400
			10	135	8	50	8	300
			8	110	6	35	6	200

HEATING: direct by A.C. or D.C.; filament thoriated tungsten

Filament voltage V_f = 18 V

Filament current I_f = 280 A

CAPACITANCES

Grid to filament C_{gf} = 240 pF

Anode to filament C_{af} = 7.5 pF

Anode to grid C_{ag} = 120 pF

TYPICAL CHARACTERISTICS

Anode voltage V_a = 4 kV

Anode current I_a = 5 A

Amplification factor μ = 55

Mutual conductance S = 130 mA/V

TEMPERATURE LIMITS (Absolute limits)

Bulb temperature t = max. 180 °C

Seal temperature t = max. 180 °C

COOLING

Cooling data for anode dissipation $W_a = 180 \text{ kW}$

Total dissipation to be transferred by cooling system

$$(W_a + W_g + 0.8 W_f) \quad 188 \text{ kW}$$

equivalent to 2700 kcal/min

Volume of produced vapour

at back flow water temperature of $20 \text{ }^\circ\text{C}$ $7.3 \text{ m}^3/\text{min}$

at back flow water temperature of $90 \text{ }^\circ\text{C}$ $8.3 \text{ m}^3/\text{min}$

Amount of back flowing water

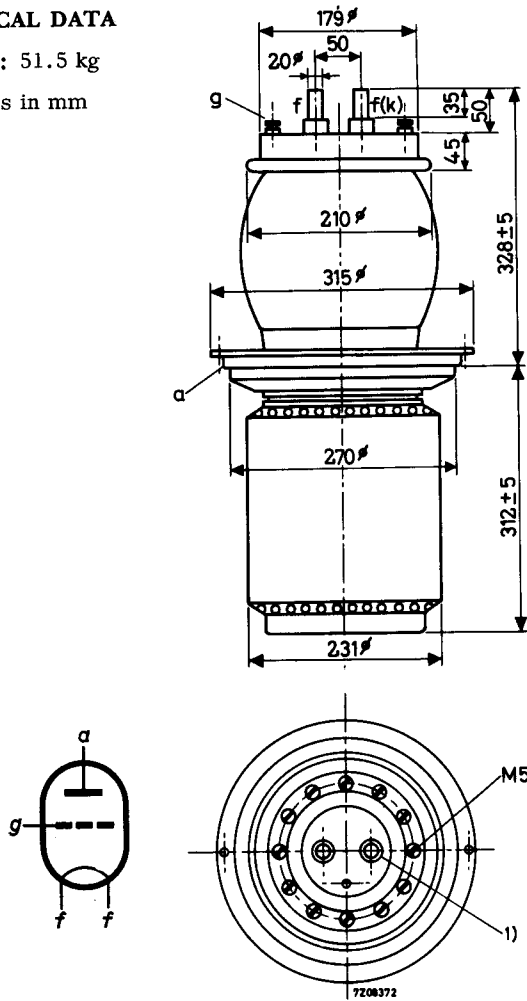
at back flow water temperature of $20 \text{ }^\circ\text{C}$ 4.4 l/min

at back flow water temperature of $90 \text{ }^\circ\text{C}$ 5.1 l/min

MECHANICAL DATA

Net weight: 51.5 kg

Dimensions in mm



Mounting position: vertical with anode down

ACCESSORIES

Vapour cooling system K729

Filament connectors with cable 40667

1) This pin should be used for connecting the anode return lead

R.F. CLASS C TELEGRAPHY

LIMITING VALUES (Absolute limits)

Frequency	f	up to	10	up to	30	MHz
Anode voltage	V_a	= max.	15		12	kV
Anode dissipation	W_a	= max.	180		180	kW
Negative grid voltage	$-V_g$	= max.	1200		1200	V
Grid dissipation	W_g	= max.	4		4	kW
Anode current	I_a	= max.	33		33	A
Grid current	I_g	= max.	8		8	A

OPERATING CONDITIONS

Frequency	f	=	10	10	30	30	MHz
Anode voltage	V_a	=	15	15	12	12	kV
Grid voltage	V_g	=	-520	-800	-480	-720	V
Anode current	I_a	=	29.3	24.7	29.3	24.7	A
Grid current	I_g	=	5.4	5.2	5.9	5.5	A
Peak driving voltage	V_{gp}	=	1090	1370	1050	1290	V
Driving power	W_{dr}	=	5.5	6.6	5.7	6.6	kW
Anode input power	W_{ia}	=	440	371	353	296	kW
Anode dissipation	W_a	=	80	61	68	51	kW
Output power	W_o	=	360	310	285	245	kW
Efficiency	η	=	81.8	83.5	80.8	82.6	%

R.F. CLASS C ANODE MODULATION

LIMITING VALUES (Absolute limits)

Frequency	f	up to	30	MHz
Anode voltage	V_a	= max.	11	kV
Anode dissipation	W_a	= max.	120	kW
Negative grid voltage	$-V_g$	= max.	1000	V
Grid dissipation	W_g	= max.	4	kW
Anode current	I_a	= max.	22	A
Grid current	I_g	= max.	8	A

OPERATING CONDITIONS

Frequency	f	=	30	30	30	MHz
Anode voltage	V_a	=	11	10	8	kV
Grid voltage	V_g	=	-170	-140	-100	V
Grid resistor	R_g	=	40	44	33	Ω
Anode current	I_a	=	19	17.3	18	A
Grid current	I_g	=	7.4	6.9	7.6	A
Peak driving voltage	V_{gp}	=	1000	930	855	V
Driving power	W_{dr}	=	7.1	6.0	6.0	kW
Anode input power	W_{i_a}	=	209	173	144	kW
Anode dissipation	W_a	=	44	38	34	kW
Output power	W_o	=	165	135	110	kW
Efficiency	η	=	79	78	76.5	%
Modulation depth	m	=	100	100	100	%
Modulation power	W_{mod}	=	105	87	72	kW

R.F. CLASS B TELEPHONY

LIMITING VALUES (Absolute limits)

Frequency	f	up to 10	up to 30	MHz
Anode voltage	V_a	= max. 15	12	kV
Anode dissipation	W_a	= max. 180	180	kW
Negative grid voltage	$-V_g$	= max. 800	800	V
Grid dissipation	W_g	= max. 4	4	kW
Anode current	I_a	= max. 27	27	A
Grid current	I_g	= max. 8	8	A

OPERATING CONDITIONS

Frequency	f	= 30	30	30	MHz
Anode voltage	V_a	= 10	8	6	kV
Grid voltage	V_g	= -150	-115	-82	V
Anode current	I_a	= 17	18.2	17.9	A
Grid current	I_g	= 0.8	1.2	1.5	A
Peak driving voltage	V_{gp}	= 338	338	321	V
Driving power	W_{dr}	= 0.25	0.36	0.43	kW
Anode input power	W_{i_a}	= 170	146	108	kW
Anode dissipation	W_a	= 110	96	73	kW
Output power	W_o	= 60	50	35	kW
Efficiency	η	= 35.3	34.3	32.6	%
Modulation depth	m	= 100	100	100	%
Grid current	I_g	= 5.9	6.8	7.2	A
Driving power	W_{dr}	= 3.6	4.1	4.1	kW

A.F. CLASS B AMPLIFIER AND MODULATOR

LIMITING VALUES (Absolute limits)

Anode voltage	V_a	=	max.	12	kV
Anode dissipation	W_a	=	max.	180	kW
Negative grid voltage	$-V_g$	=	max.	800	V
Grid dissipation	W_g	=	max.	4	kW
Anode current	I_a	=	max.	33	A
Grid current	I_g	=	max.	8	A

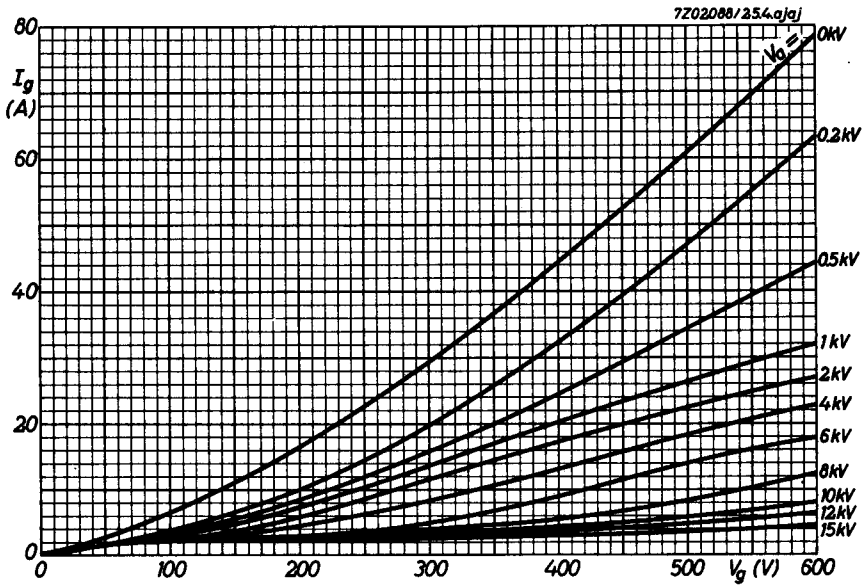
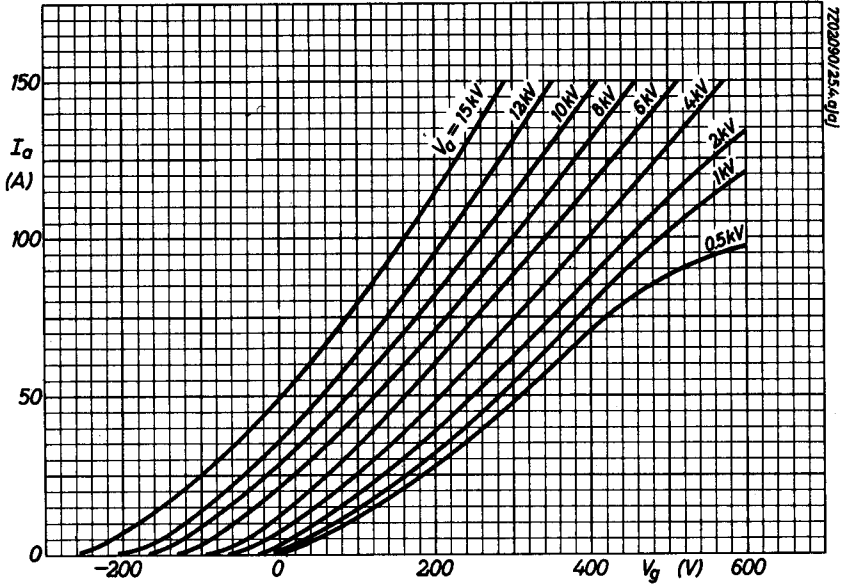
OPERATING CONDITIONS (Two tubes in push-pull)

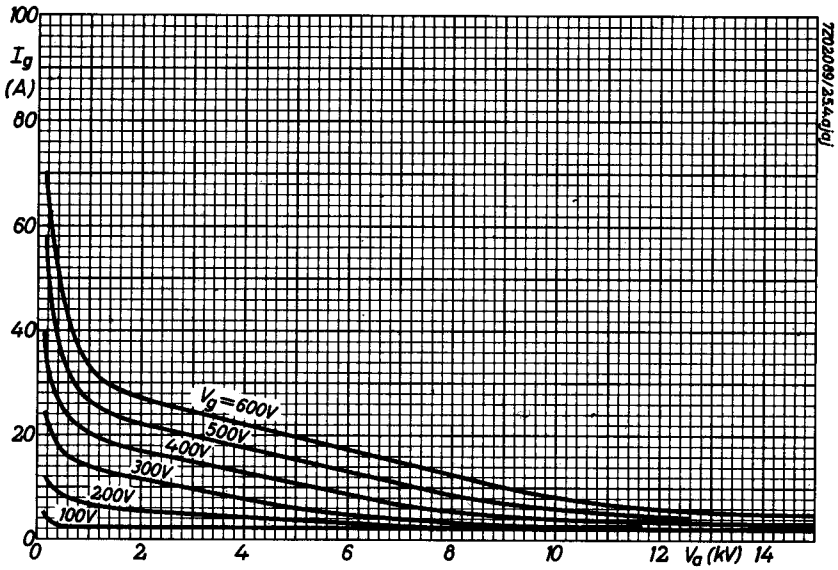
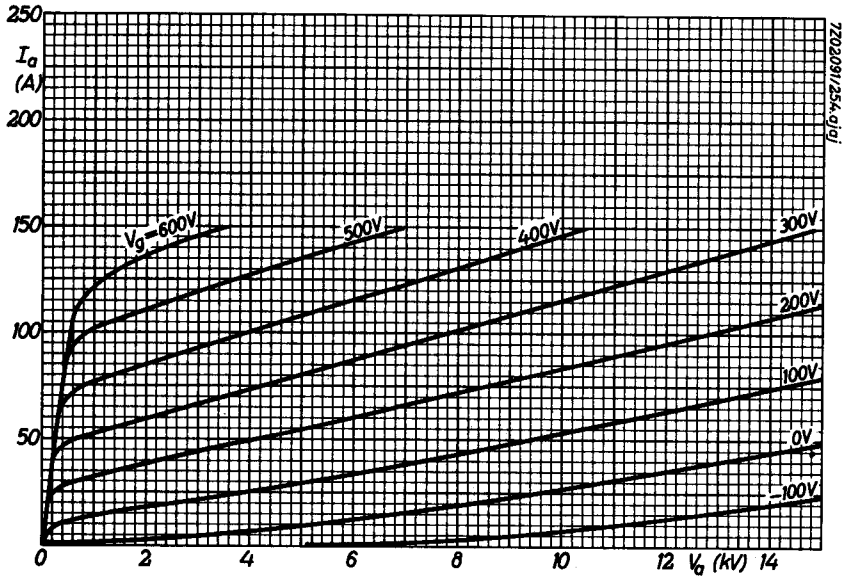
Anode voltage	V_a	=	12	10	kV
Grid voltage	V_g	=	-180	-150	V
Load resistance	$R_{aa\sim}$	=	552	410	Ω
Peak driving voltage	V_{ggp}	=	0 1210	0 1205	V
Anode current	I_a	=	2x2.0 2x26	2x1.8 2x28	A
Average grid current	I_g	=	0 2x4.4	0 2x4.8	A
Peak grid current	I_{gp}	=	0 2x23	0 2x24	A
Driving power	W_{dr}	=	0 2x2.4	0 2x2.6	kW
Anode input power	W_{i_a}	=	2x24 2x312	2x18 2x280	kW
Anode dissipation	W_a	=	2x24 2x87	2x18 2x80	kW
Output power	W_o	=	0 450	0 400	kW
Efficiency	η	=	- 72	- 71.4	%

A.F. CLASS B AMPLIFIER AND MODULATOR

OPERATING CONDITIONS (Two tubes in push-pull; continued)

Anode voltage	V_a	=	8	6	kV
Grid voltage	V_g	=	-115	-82	V
Load resistance	$R_{aa\sim}$	=	338	268	Ω
Peak driving voltage	V_{ggp}	=	0 1110	0 990	V
Anode current	I_a	=	2x1.6 2x27	2x1.4 2x25	A
Average grid current	I_g	=	0 2x5.0	0 2x4.9	A
Peak grid current	I_{gp}	=	0 2x24	0 2x22	A
Driving power	W_{dr}	=	0 2x2.5	0 2x2.2	kW
Anode input power	W_{i_a}	=	2x12.8 2x216	2x8.4 2x150	kW
Anode dissipation	W_a	=	2x12.8 2x66	2x8.4 2x50	kW
Output power	W_o	=	0 300	0 200	kW
Efficiency	η	=	- 69.5	- 67	%





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