

S.Q. TUBE

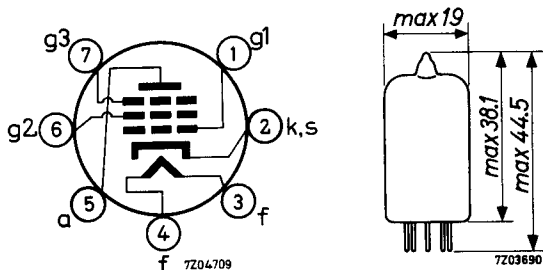
Special quality pentode designed for use as R.F. amplifier.

QUICK REFERENCE DATA	
Life test	1000 hours
Mechanical quality	Shock and vibration resistant
Base	Miniature 7 pin
Heating	Indirect A.C. or D.C.; parallel supply
Heater voltage	V_f 6.3 V
Heater current	I_f 175 mA
Sharp cut-off	
Double control	

DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Miniature 7 pin



CHARACTERISTICS

Column I Nominal value or setting of the tube

II Range values for equipment design: Initial spread

III Range values for equipment design: End of life

		I	II	III	
Heater voltage	V_f	6.3			V
Heater current	I_f	175	160 - 190		mA
Anode voltage	V_a	120			V
Grid No.2 voltage	V_{g2}	120			V
Grid No.3 voltage	V_{g3}	0			V
Grid No.1 voltage	$-V_{g1}$	2			V
Anode current	I_a	5.2	2.5 - 9.0		mA
Grid No.2 current	I_{g2}	3.5	max.5.5		mA
Mutual conductance, grid No.1	S_{g1}	3.2	2.5 - 4.5	ΔS max. 20%	mA/V
Mutual conductance, grid No.3	S_{g3}	0.47			mA/V
Internal resistance	R_i	150			k Ω
Negative grid No.1 current	$-I_{g1}$		max.0.1	max. 0.2	μA
Anode voltage	V_a	120			V
Grid No.2 voltage	V_{g2}	120			V
Grid No.3 voltage	$-V_{g3}$	3			V
Grid No.1 voltage	$-V_{g1}$	2			V
Anode current	I_a	3.6			mA
Grid No.2 current	I_{g2}	4.8			mA
Mutual conductance, grid No.1	S_{g1}	1.85			mA/V
Mutual conductance, grid No.3	S_{g3}	0.7			mA/V
Anode voltage	V_a	120			V
Grid No.2 voltage	V_{g2}	120			V
Grid No.3 voltage	$-V_{g3}$	5			V
Grid No.1 voltage	$-V_{g1}$	2			V
Mutual conductance, grid No.3	S_{g3}	1.2	0.7 - 1.7		mA/V

CHARACTERISTICS (continued)

		I	II	III	
<u>Cut-off voltage</u>	$-V_{g1}$	8			V
Anode voltage	V_a	120			V
Grid No.2 voltage	V_{g2}	120			V
Grid No.3 voltage	V_{g3}	0			V
Anode current	I_a		max. 50		μA
<u>Cut-off voltage</u>	$-V_{g1}$	6			V
Anode voltage	V_a	120			V
Grid No.2 voltage	V_{g2}	120			V
Grid No.3 voltage	V_{g3}	0			V
Anode current	I_a		min. 5		μA
<u>Cut-off voltage</u>	$-V_{g1}$	3			V
	$-V_{g3}$	5.5			V
Anode voltage	V_a	120			V
Grid No.2 voltage	V_{g2}	120			V
Anode current	I_a		min. 5		μA
<u>Cut-off voltage</u>	$-V_{g1}$	3			V
	$-V_{g3}$	10			V
Anode voltage	V_a	120			V
Grid No.2 voltage	V_{g2}	120			V
Anode current	I_a		max. 50		μA
<u>Cut-off voltage</u>	$-V_{g1}$	2			V
	$-V_{g2}$	15			V
Anode voltage	V_a	120			V
Grid No.2 voltage	V_{g2}	120			V
Anode current	I_a	10			μA
<u>Leakage current between cathode and heater</u>	I_{kf}		max. 10	max. 10	μA
Voltage between cathode and heater $V_{kf} = 100$ V					
Cathode negative					

CHARACTERISTICS (continued)

Vibrational noise

- Anode voltage $V_a = 120$ V
- Grid No.2 voltage $V_{g_2} = 120$ V
- Grid No.1 voltage $-V_{g_1} = 2$ V
- Grid No.3 voltage $V_{g_3} = 0$ V
- Anode resistor $R_a = 10$ k Ω
- Vibration frequency = 50 Hz
- Acceleration = 10 g

V_o

	I	II	
		max.150	mV
C_{a/g_3g_2kfs}	3.0	2.6 - 3.4	pF
C_{g_1/g_3g_2kfs}	4.0	3.5 - 4.5	pF
$C_{g_1g_3}$		max.150	mpF
C_{ag_1}		max. 20	mpF
C_{g_1/g_3g_2kfs}	5.5		pF

CAPACITANCES With external screen

- Anode to grid No.3, grid No.2, cathode, heater and screen
- Grid No.1 to grid No.3, grid No.2, cathode, heater and screen
- Grid No.1 to grid No.3
- Anode to grid No.1
- Grid No.1 to grid No.3, grid No.2, cathode, heater and screen
- Cathode current $I_k = 12$ mA
- Frequency = 100 MHz

SHOCK AND VIBRATION RESISTANCE

The following test conditions are applied to assess the mechanical quality of the tube. These conditions are not intended to be used as normal operating conditions.

Shock

The tube is subjected 5 times in each of 4 positions to an acceleration of 500 g supplied by an NRL shock machine with the hammer lifted over an angle of 30°.

Vibration

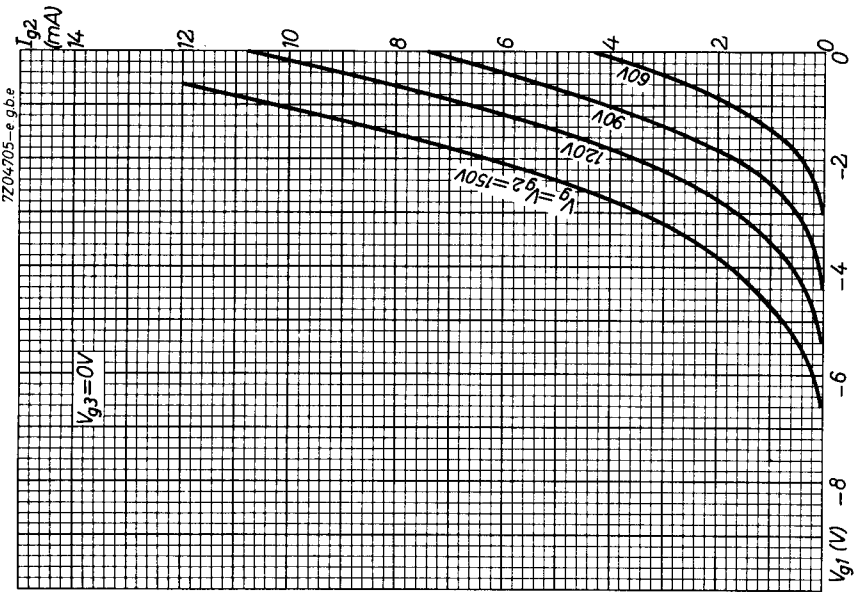
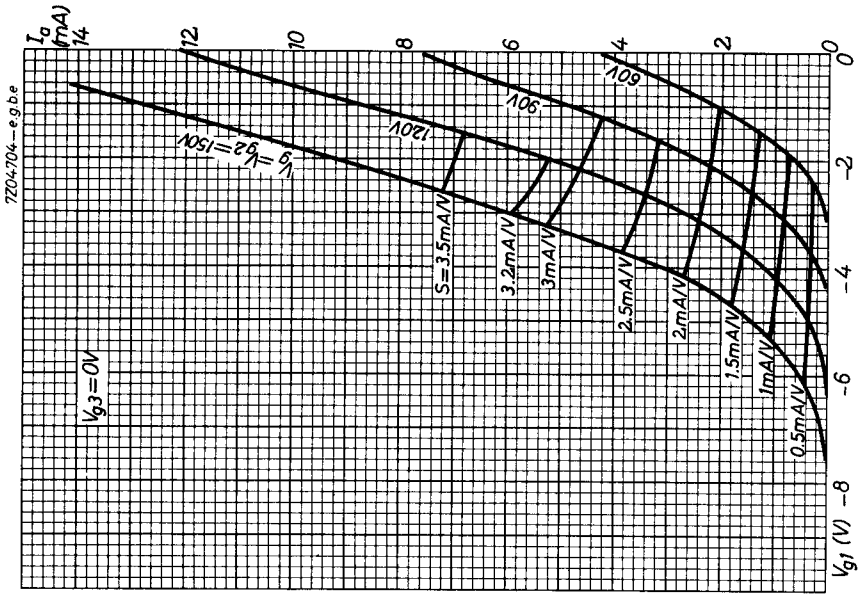
The tube is subjected during 32 hours in each of 3 positions to a vibration frequency of 50 Hz with an acceleration of 2.5 g.

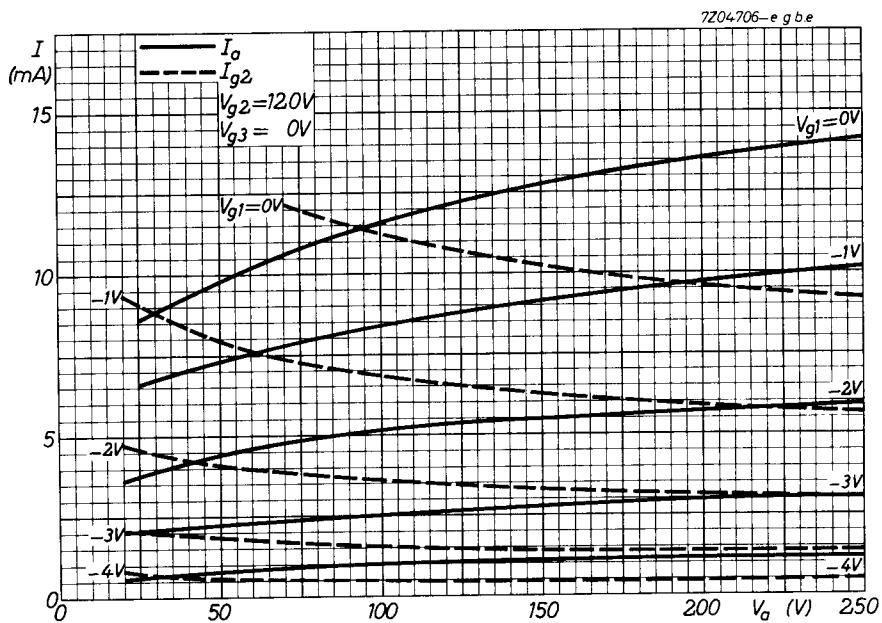
LIFE

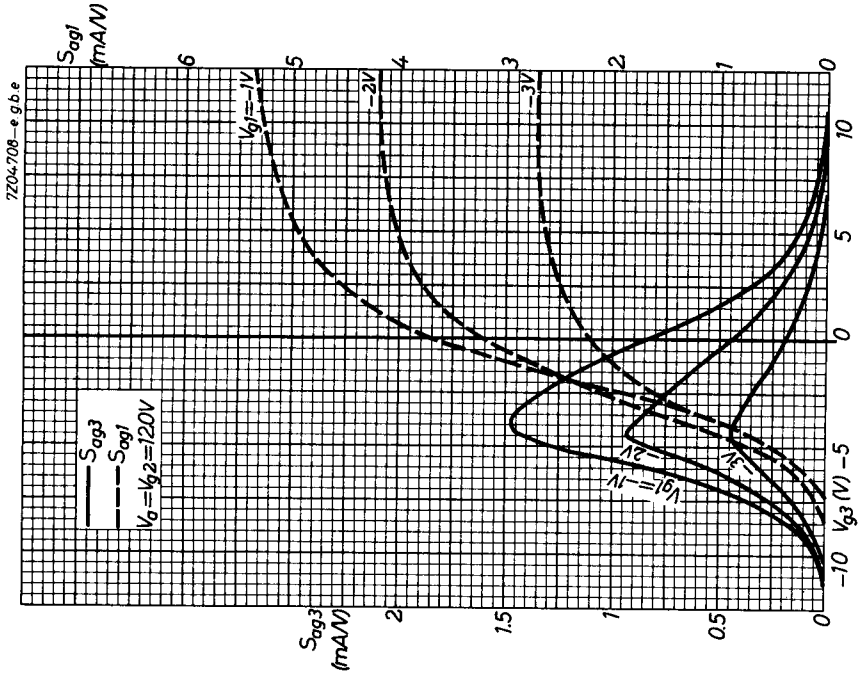
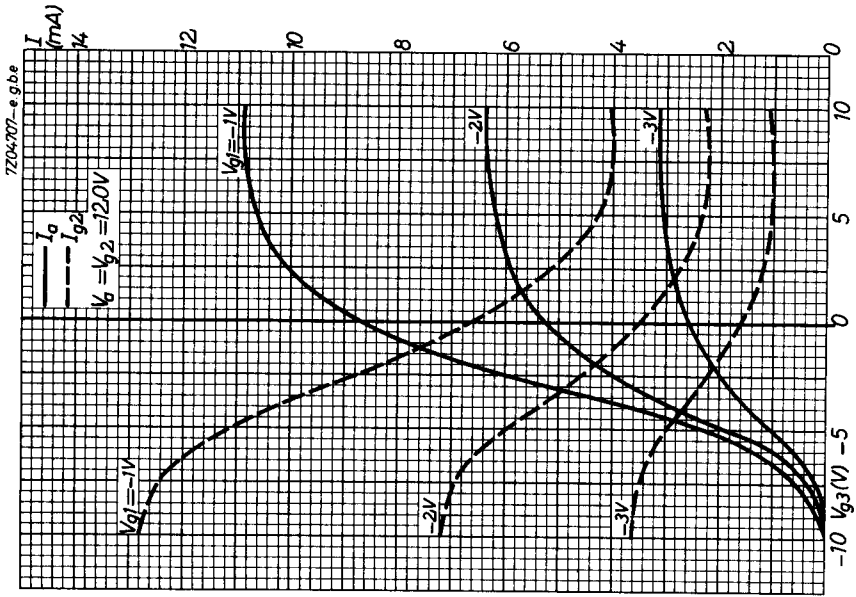
Production samples are tested to be within the end of life values (column III) during 1000 hours.

LIMITING VALUES (Absolute max. rating system)

Anode voltage	V_a	max.	200	V
Grid No.2 voltage	V_{g_2}	max.	155	V
Grid No.3 voltage	V_{g_3}	max.	30	V
Anode dissipation	W_a	max.	1.85	W
Grid No.2 dissipation	W_{g_2}	max.	0.85	W
Cathode current	I_k	max.	20	mA
Voltage between cathode and heater	V_{kf}	max.	100	V
Grid resistor with fixed bias	R_{g_1}	max.	1	$M\Omega$
Bulb temperature	t_{bulb}	max.	165	$^{\circ}C$







PHILIPS

Data handbook



Electronic
components
and materials

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1	1	1968.12
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3	3	1968.12
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9	FP	2001.04.22