

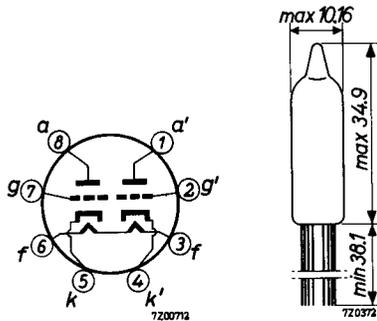
### S.Q. TUBE

Special quality double triode designed for use as R. F. amplifier and oscillator.

QUICK REFERENCE DATA	
Life test	1000 hours
Mechanical quality	Shock and vibration resistant
Base	Subminiature
Heating	Indirect
	A. C. or D. C. ; parallel supply
Heater voltage	$V_f$ 6.3 V
Heater current	$I_f$ 300 mA
Anode current	$I_a$ 6.5 mA
Mutual conductance	S 5.4 mA/V

#### DIMENSIONS AND CONNECTIONS

Dimensions in mm



Connections should not be soldered nearer than 5 mm to the seal.

Leads should not be bent nearer than 1.5 mm to the seal.

**CHARACTERISTICS** (both sections if applicable)

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	$I_f$	300	280 - 320		mA
Anode voltage	$V_a$	100			V
Cathode resistor	$R_k$	150			$\Omega$
Anode current	$I_a$	6.5	4.5 - 8.5		mA
Difference in anode current of both systems	$ I_a - I_a' $		max. 1.6		mA
Mutual conductance	$S$	5.4	4.45 - 6.35	$\Delta S$ : max. 25 %	mA/V
Amplification factor	$\mu$	35	30 - 40		
Internal resistance	$R_i$	6.5			k $\Omega$
<u>Cut-off voltage</u>	$-V_g$		max. 6.5		V
Anode voltage	$V_a$	100			V
Anode current	$I_a$	100			$\mu A$
<u>Negative grid current</u>	$-I_g$		max. 0.3	max. 1.0	$\mu A$
Anode voltage	$V_a$	150			V
Cathode resistor	$R_k$	300			$\Omega$
Grid resistor	$R_g$	1			M $\Omega$
<u>Leakage current between cathode and heater</u>	$I_{kf}$		max. 5	max. 10	$\mu A$
Voltage between cathode and heater $V_{kf} = 100$ V					
<u>Insulation resistance between two electrodes</u>	$R_{ins}$		min. 100	min. 50	M $\Omega$
Voltage between electrodes = 100 V					

## CHARACTERISTICS (continued)

		I	II	III	
<u>Vibrational noise output</u>	$V_o$		max. 35		$mV_{RMS}$
Anode supply voltage $V_{ba} = 100$ V					
Anode resistor $R_a = 10$ k $\Omega$					
Cathode resistor $R_k = 150$ $\Omega$					
Cathode bypass capacitor $C = 1000$ $\mu$ F					
Vibration frequency = 40 Hz					
Acceleration = 15 g					
<b>CAPACITANCES</b>					
Grid to cathode and heater	$C_{g/kf}$	2.4	1.8 - 3.0		pF
Anode to cathode and heater	$C_{a/kf}$	0.28	0.20 - 0.36		pF
	$C_{a'/k'f}$	0.32	0.22 - 0.42		pF
Anode to grid	$C_{ag}$	1.5	1.2 - 1.8		pF
Grid to grid other section	$C_{gg'}$		max. 0.013		pF
Anode to anode other section	$C_{aa'}$		max. 0.52		pF

**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) under the following conditions during 1000 hours:

Anode voltage  $V_a = 100$  V

Cathode resistor  $R_k = 150$   $\Omega$

Voltage between  
cathode and heater  $V_{kf} = 200$  V

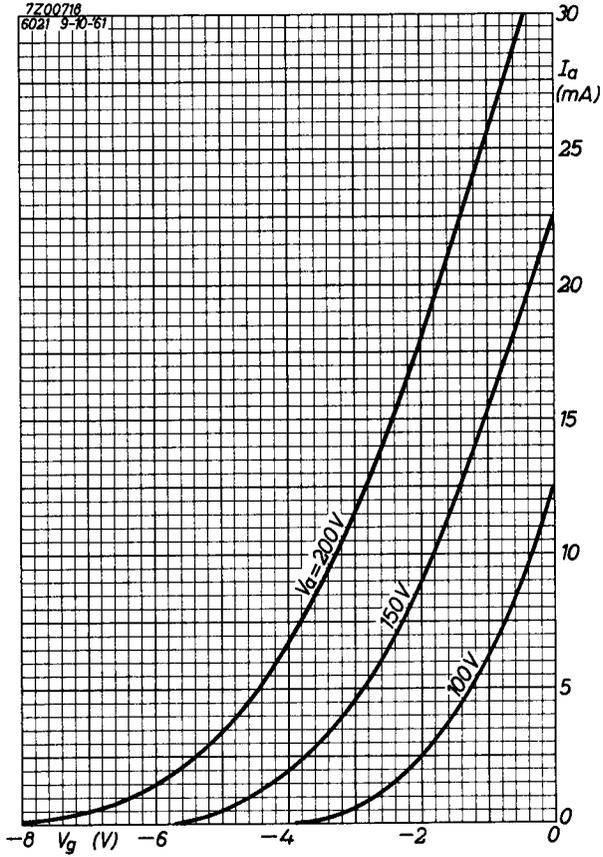
**LIMITING VALUES** (Absolute max. rating system)

Anode voltage	$V_{a0}$	max.	330 V
Anode voltage	$V_a$	max.	165 V
Anode dissipation	$W_a$	max.	0.7 W
Anode current	$I_a$	max.	22 mA
Grid voltage	$-V_g$	max.	55 V
Grid current	$I_g$	max.	5.5 mA
Grid resistor	$R_g$	max.	1.1 M $\Omega$
Voltage between cathode and heater d. c. or peak value	$V_{kf}$	max.	200 V
Bulb temperature	$t_{bulb}$	max.	220 °C

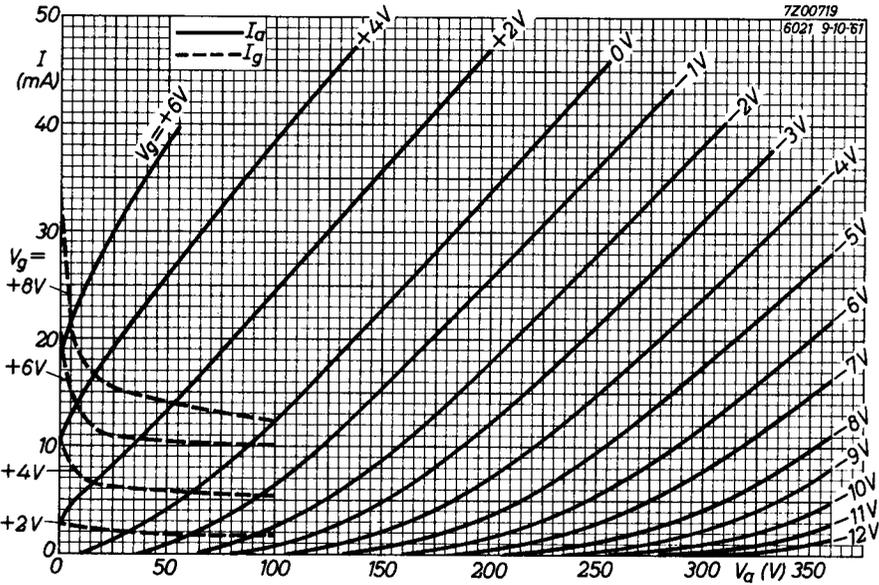
Heater voltage: The average heater voltage should be 6.3 V.

Variations of the heater voltage exceeding the range of 6.0 V to 6.6 V will shorten the tube life.

The tolerance of heater current (column II) should be taken into account.



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# PHILIPS

Data handbook



Electronic  
components  
and materials

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