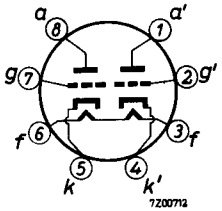
S.Q. TUBE

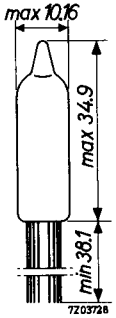
Special quality double triode designed for use as R.F. amplifier and oscillator.

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			Ω
Anode current	I_a	6.5	4.5 - 8.5		mA
Difference in anode current of both systems	$\lvert I_a - I_a' \rvert$		max. 1.6		mA
Mutual conductance	S	5.4	4.45 - 6.35	ΔS: max. 25 %	mA/V
Amplification factor	μ	35	30 - 40		
Internal resistance	R_i	6.5			kΩ
Cut-off voltage	$-V_g$		max. 6.5		V
Anode voltage	V_a	100			V
Anode current	I_a	100			μA
Negative grid current	$-I_g$		max. 0.3	max. 1.0	μA
Anode voltage	V_a	150			V
Cathode resistor	R_k	300			Ω
Grid resistor	R_g	1			MΩ
Leakage current between cathode and heater Voltage between cathode and heater V_{kf} = 100 V	I_{kf}		max. 5	max. 10	μA
Insulation resistance between two electrodes Voltage between electrodes = 100 V	R_{ins}		min. 100	min. 50	MΩ

CHARACTERISTICS (continued)

		I	II	III	
Vibrational noise output	V_o		max. 35		mV_{RMS}
Anode supply voltage V_{ba} = 100 V					
Anode resistor R_a = 10 kΩ					
Cathode resistor R_k = 150 Ω					
Cathode by pass capacitor C = 1000 μF					
Vibration frequency = 40 Hz					
Acceleration = 15 g					
CAPACITANCES					
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

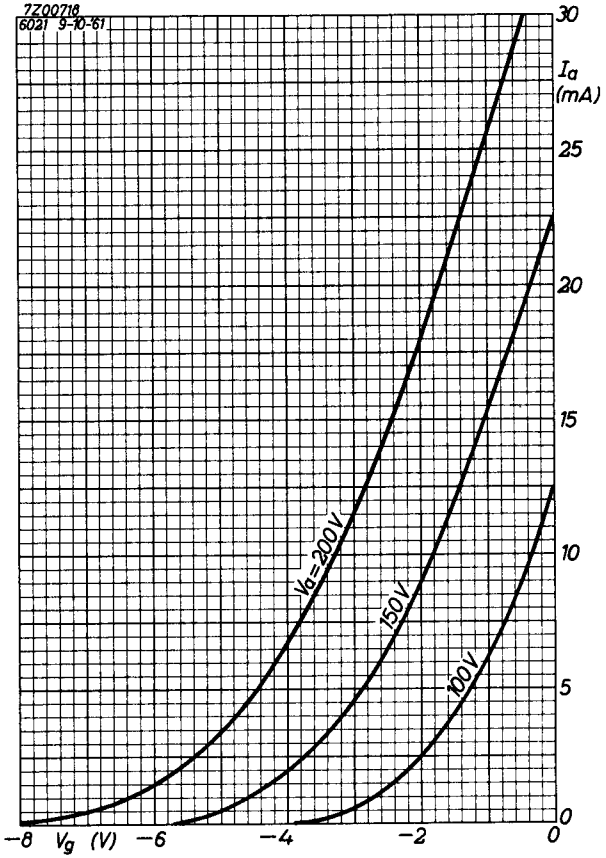
Cathode resistor R_k = 150 Ω

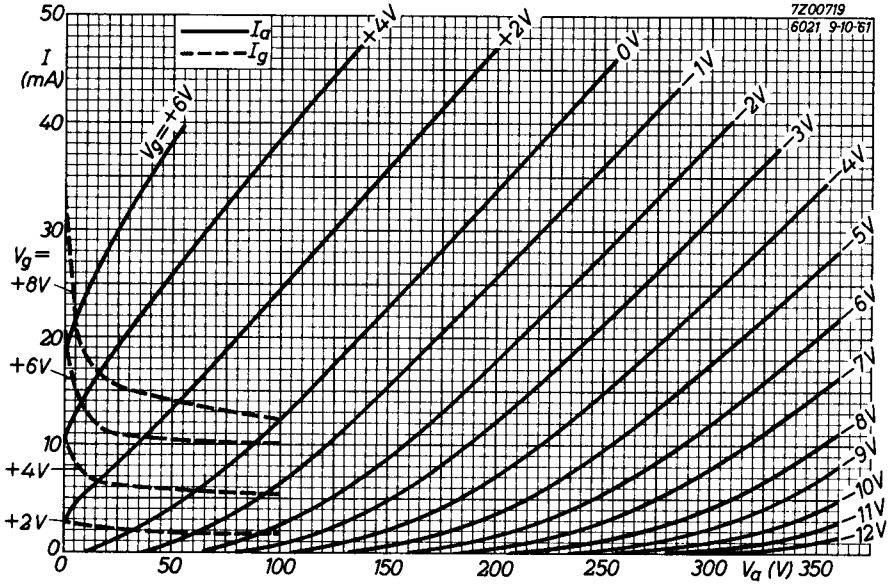
Voltage between cathode and heater V_{kf} = 200 V

LIMITING VALUES (Absolute max. rating system)

Anode voltage	V_{a_o}	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	MΩ
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.


7Z00718
6021 9-10-61
30
Ia
(mA)
25
20
15
10
5
0
Va=200V
150V
100V
−8 Vg (V) −6
−4
−2
0


7Z00719
6021 9-10-61
50
I
(mA)
40
30
20
10
0
I_a
I_g
V_g=
+8V
+6V
+4V
+2V
V_g=+6V
+4V
+2V
0V
-1V
-2V
-3V
-4V
-5V
-6V
-7V
-8V
-9V
-10V
-11V
-12V
0
50
100
150
200
250
300
V_a (V) 350

PHILIPS

Data handbook

PHILIPS Electronic components and materials

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1	1	1968.12
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7	FP	2001.05.12