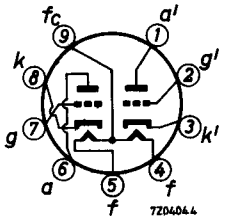
S.Q. TUBE

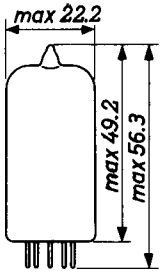
Special quality double triode designed for use as amplifier oscillator, multivibrator and blocking oscillator.

QUICK REFERENCE DATA			
Life	10 000 hours		
Low interface resistance			
Mechanical quality	Shock and vibration resistant		
Base	Noval		
Heating	Indirect A.C. or D.C.; Parallel supply		
Heater voltage	V_f	6.3 or 12.6	V
Heater current	I_f	300 or 150	mA
Anode current	I_a	10.5	mA
Mutual conductance	S	2.2	mA/V

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Noval





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, pin 9 and 4 + 5	V_f	6.3			V
Heater current	I_f	300	285- 315		mA
Heater voltage, pin 4 and 5	V_f	12.6			V
Heater current	I_f	150			mA
Anode voltage	V_a	250			V
Cathode resistor	R_k	800			Ω
Anode current	I_a	10.5	8.7-12.3	min. 7.0	mA
Difference in anode current of both systems	I_a-I_a'		max. 1.6		mA
Mutual conductance	S	2.2	1.8- 2.6	min. 1.5	mA/V
Amplification factor	μ	17.0	15.7-18.3		
Internal resistance	R_i	7.7			kΩ
Cut-off voltage					
Grid voltage	$-V_g$	22			V
Anode current	I_a	10			μA
Grid voltage	$-V_g$		max. 30		V
Anode current	I_a	20			μA
Grid voltage	$-V_g$		min. 18		V
Anode current	I_a	5			μA
Negative grid current	$-I_g$		max. 0.5	max. 1.0	μA
Anode voltage	V_a	100			V
Grid voltage	V_g	0			V
Anode current	I_a	11.8			mA
Mutual conductance	S	3.1			mA/V
Amplification factor	μ	19.5			
Internal resistance	R_i	6.25			kΩ

CHARACTERISTICS (continued)

		I	II	
Leakage current between cathode and heater	I_{kf}		max. 6.5	μA
Insulation resistance:				
Between grid and other electrodes	R_{ins}		min. 500	MΩ
Voltage between electrodes = 100 V				
Between anode and other electrodes	R_{ins}		min. 500	MΩ
Voltage between electrodes = 300 V				
Vibrational noise output (20 to 5000 Hz)	V_o		max. 100	mV_{RMS}
Anode voltage V_a = 250 V				
Grid voltage $-V_g$ = 8.5 V				
Anode resistor R_a = 2 kΩ				
Vibration frequency = 40 Hz				
Acceleration = 10 g				
Units in parallel				
CAPACITANCES				
Anode to cathode and heater	$C_{a/kf}$	0.5	0.3 - 0.7	pF
	$C_{a'/k'f}$	0.4	0.2 - 0.6	pF
Grid to cathode and heater	$C_{g/kf}$	1.6	1.25 - 1.95	pF
Anode to grid	C_{ag}	1.5	1.2 - 1.8	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.

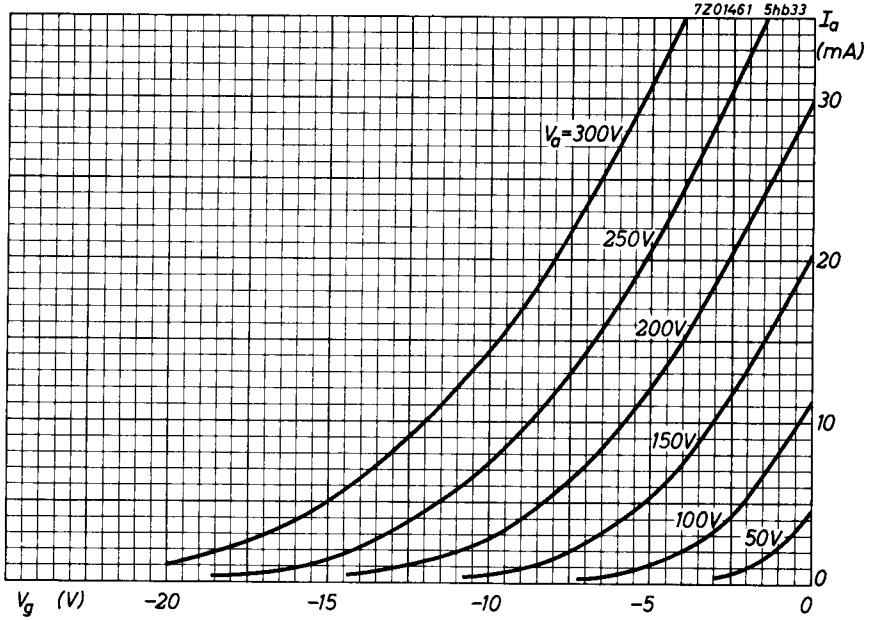
LIFE

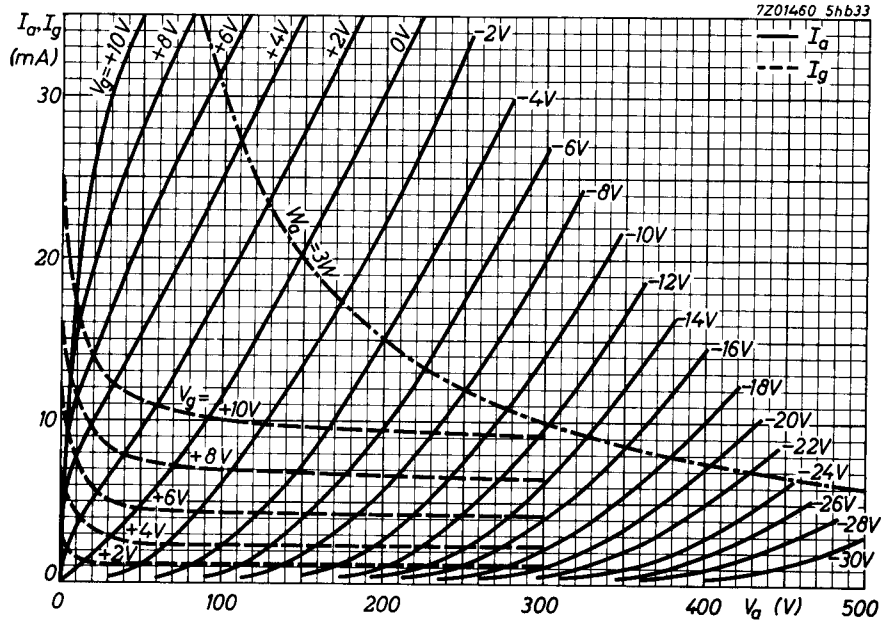
Production samples are tested to be within the end of life values (column III) during 10 000 hours.

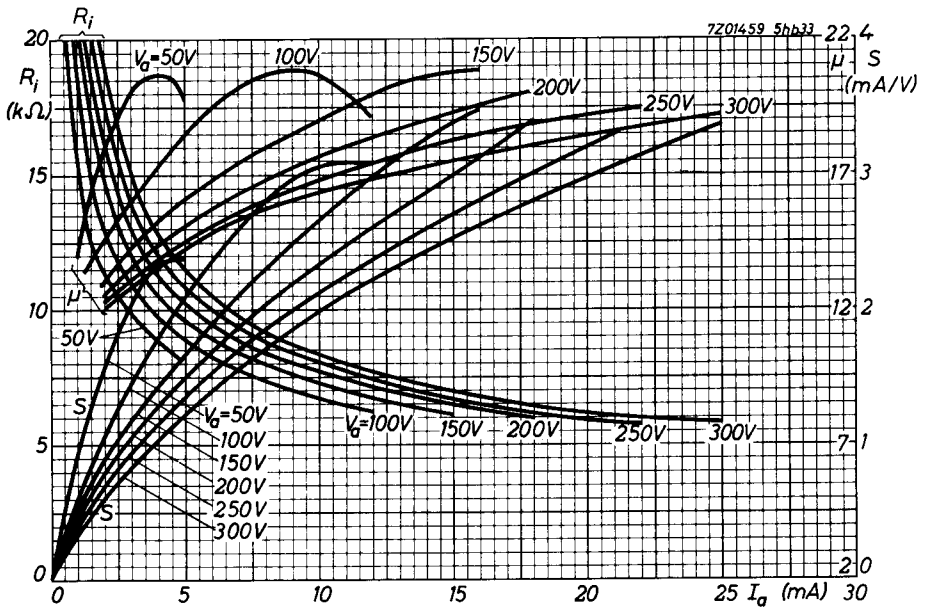
LIMITING VALUES (Absolute max. rating system)

Anode voltage	V_{a_o}	max. 600	V
	V_a	max. 330	V
Anode dissipation	W_a	max. 3	W
Grid voltage	$-V_g$	max. 55	V
	$+V_g$	max. 0	V
Grid current	I_g	max. 5	mA
Grid resistor: fixed bias	R_g	max. 0.5	MΩ
automatic bias	R_g	max. 1.0	MΩ
Cathode current	I_k	max. 22	mA
Voltage between cathode and heater	V_{kf}	max. 100	V
Bulb temperature	t_{bulb}	max. 165	°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.


7Z01461 5hb33
I_a (mA)
30
20
10
0
V_a=300V
250V
200V
150V
100V
50V
V_g (V)
-20
-15
-10
-5
0


7Z01460 5hb33
I_a, I_g (mA)
I_a
I_g
30
20
10
0
V_g=+10V
+8V
+6V
+4V
+2V
0V
-2V
-4V
-6V
-8V
-10V
-12V
-14V
-16V
-18V
-20V
-22V
-24V
-26V
-28V
-30V
V_a=3V
V_g=+10V
+8V
+6V
+4V
+2V
0
100
200
300
400
V_a (V)
500


7Z01459 5hb33
R_i
R_i (kΩ)
V_a=50V
100V
150V
200V
250V
300V
μ
S
(mA/V)
50V
V_g=50V
100V
150V
200V
250V
300V
V_g=100V
I_a (mA)
0
5
10
15
20
25
30
22
17
12
7
2
4
3
2
1
0

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E82CC

page	sheet	date
1	1	1968.12
2	2	1968.12
3	3	1968.12
4	4	1968.12
5	5	1968.12
6	6	1968.12
7	FP	2000.11.17