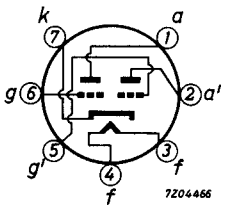
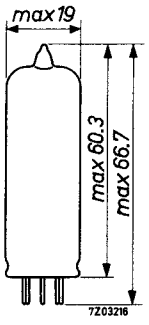
S.Q. TUBE

Special quality double triode designed for use in computer circuits.

QUICK REFERENCE DATA		
Life expectancy	10 000 hours	
Low interface resistance		
Base	Miniature, 7 pin	
Heating	Direct A.C. or D.C. Series or parallel supply	
Heater voltage	V_f	6.3 V
Heater current	I_f	400 mA

DIMENSIONS AND CONNECTIONS Dimensions in mm





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

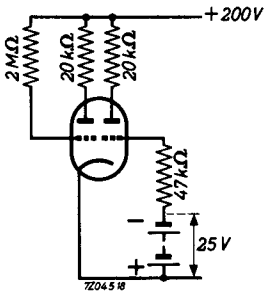
		I	II	III	
Heater voltage	V_f	6.3			V
Heater current	I_f	400	380 - 420		mA
Anode voltage	V_a	100			V
Negative grid voltage	$-V_g$	2.1			V
Anode current	I_a	8.5	4.5 - 12.5		mA
Mutual conductance	S	6.0			mA/V
Amplification factor	μ	27			
Anode voltage	V_a	100			V
Cathode resistor	R_k	250			Ω
Mutual conductance	S	6.0	4.5 - 7.5	min. 3.0	mA/V
Negative grid current	$-I_{g_1}$		max. 0.2	max. 1.0	μA
Anode supply voltage	V_{ba}	150			V
Anode resistor	R_a	20			kΩ
Grid resistor	R_g	47			kΩ
Anode current	I_a	5.6	5.0 - 6.2	min. 4.5	mA
Grid supply voltage	V_{bg}	0			V
Anode current	I_a		max. 0.1	max. 0.1	mA
Grid supply voltage	$-V_{bg}$	10			V
Difference in grid voltage of two sections	$\lvert V_g - V_g' \rvert$		max. 2	max. 2	V
Anode current	$I_a = I_a'$	0.1			V
Leakage current between cathode and heater	I_{kf}		max. 15	max. 30	μA
Voltage between cathode and heater	V_{kf}	100			V
Insulation between two electrodes	R_{ins}		min. 100	min. 20	MΩ
Voltage between electrodes	V	300			V

CAPACITANCES Each system if applicable.

		I	II	
Anode to cathode and heater	$C_{a/kf}$	0.35	0.25 - 0.45	pF
	$C_{a'/k'f}$	0.4	0.3 - 0.5	pF
Grid to cathode and heater	$C_{g/kf}$	3.4	2.9 - 3.9	pF
Anode to grid	C_{ag}	2.5	2.0 - 3.0	pF
Grid to heater	C_{gf}		max. 0.15	pF
	$C_{g'f}$		max. 0.3	pF
Anode to anode other section	$C_{aa'}$		max. 1.4	pF
Grid to grid other section	$C_{gg'}$		max. 0.22	pF
Anode to grid other section	$C_{ag'}$		max. 0.35	pF
Grid to anode other section	$C_{ga'}$		max. 0.15	pF
Cathode to heater	C_{kf}	6.5		pF

LIFE

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



I_a = 8 mA

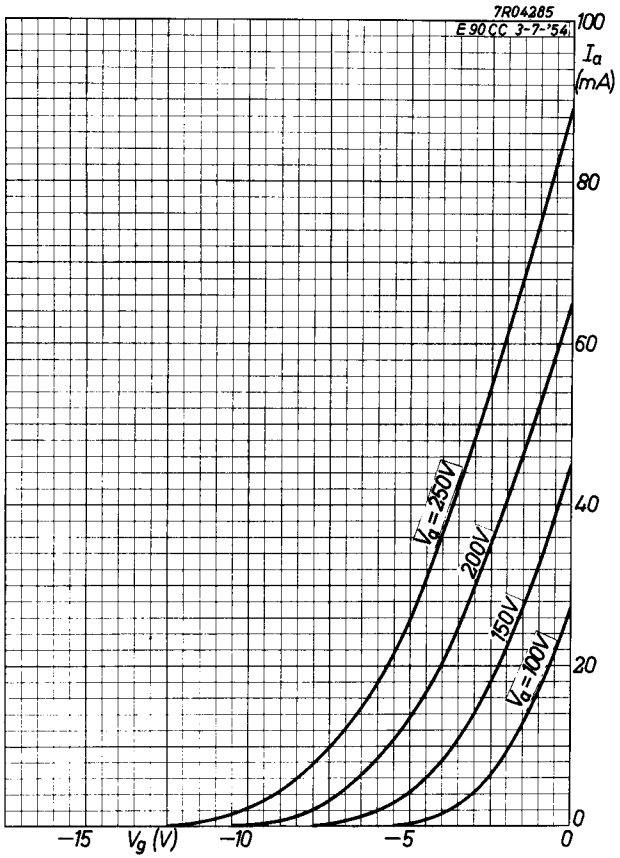
$I_{a'}$ = 0 mA

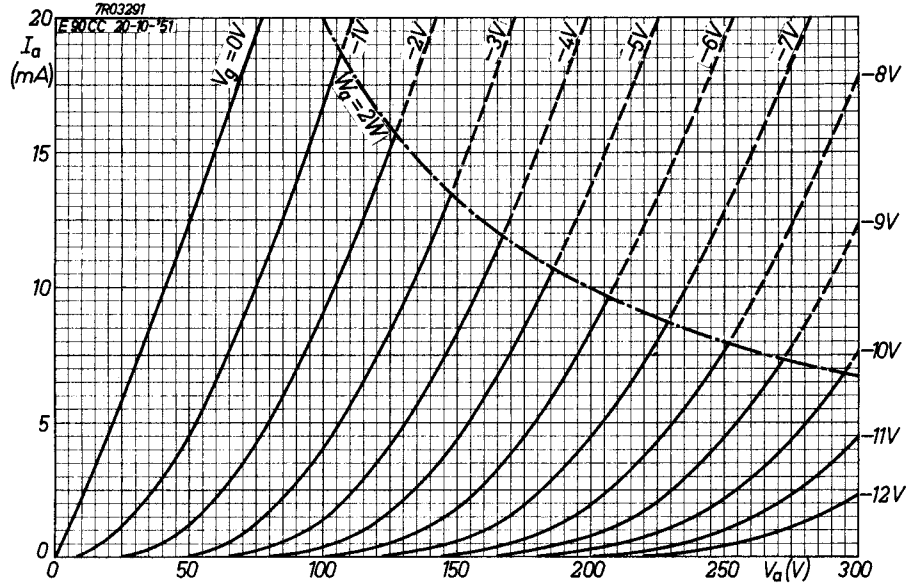
V_{kf} = 100 V (k pos)

LIMITING VALUES (Absolute max. rating system)

Anode voltage	V_{a_o}	max.	600	V
	V_a	max.	300	V
Anode dissipation	W_a	max.	2.0	W
Grid voltage	$+V_g$	max.	0	V
	$-V_g$	max.	100	V
Grid peak voltage	$-V_{g_p}$	max.	200	V
Grid current	I_g	max.	250	μA
Grid, peak current max. pulse duration 2.5 msec	I_{g_p}	max.	1	mA
Cathode current	I_k	max.	15	mA
Cathode peak current max. pulse duration 2 msec	I_{k_p}	max.	75	mA
Voltage between cathode and heater	V_{kf}	max.	100	V
Grid resistor, automatic bias	R_g	max.	1	MΩ
fixed bias	R_g	max.	0.5	MΩ
Bulb temperature	t_{bulb}	max.	170	°C

Heater voltage: The average heater 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.


7R04285
E90CC 3-7-'54
100
I_a
(mA)
80
60
40
20
0
V_g = 250V
200V
150V
V_g = 100V
−15
V_g (V)
−10
−5
0


7R03291
E90CC 20-10-'51
I_a (mA)
20
15
10
5
0
0
50
100
150
200
250
V_a(V)
300
V_g = 0V
-1V
-2V
-3V
-4V
-5V
-6V
-7V
-8V
-9V
-10V
-11V
-12V
W_a = 2W

PHILIPS

Data handbook

PHILIPS Electronic components and materials

E90CC

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	2000.11.24