A.F. DOUBLE TRIODE

Double triode intended for use as A.F. amplifier.

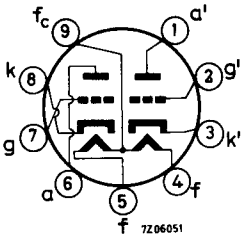
QUICK REFERENCE DATA (each unit)			
Anode current	I_a	1.2	mA
Transconductance	S	1.6	mA/V
Amplification factor	μ	100	-

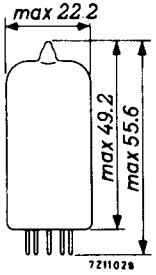
HEATING: Indirect by A.C. or D.C.; series or parallel supply

Heater voltage	V_f	6.3	12.6 V
Heater current	I_f	300	150 mA
		pins 9-(4+5)	pins 4-5

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Noval





REMARK

With V_f applied to pins 9 and 4+5 and the centre tap of the heater transformer connected to earth, the triode section connected to pins 6, 7 and 8 is the more favourable section of the tube with respect to hum.

CAPACITANCES

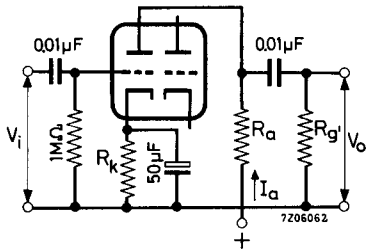
Grid to all except anode	$C_{g(a)}$	1.6	pF
	$C_{g'(a')}$	1.6	pF
Anode to all except grid	$C_{a(g)}$	0.33	pF
	$C_{a'(g')}$	0.23	pF
Anode to grid	C_{ag}	1.6	pF
	$C_{a'g'}$	1.6	pF
Grid to heater	C_{gf}	max. 0.15	pF
	$C_{g'f}$	max. 0.15	pF
Anode to anode	$C_{aa'}$	max. 1.2	pF
Anode to grid other unit	$C_{ag'}$	max. 0.11	pF
Grid to anode other unit	$C_{ga'}$	max. 0.1	pF
Grid to grid	$C_{gg'}$	max. 0.01	pF

TYPICAL CHARACTERISTICS

Anode voltage	V_a	100	250	V
Grid voltage	V_g	−1.0	−2.0	V
Anode current	I_a	0.5	1.2	mA
Transconductance	S	1.25	1.6	mA/V
Amplification factor	μ	100	100	–
Internal resistance	R_i	80	62.5	kΩ

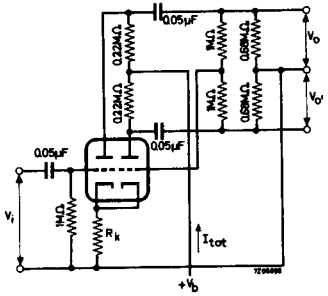
OPERATING CHARACTERISTICS

As A.F. amplifier, one unit

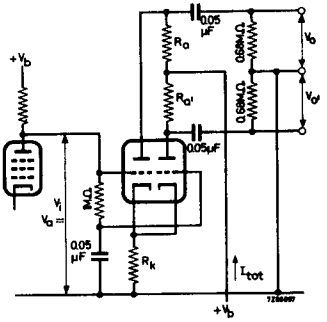


Supply voltage	V_b	200	250	300	350	400	V
Anode resistor	R_a	47	47	47	47	47	kΩ
Grid resistor next stage	R_g'	150	150	150	150	150	kΩ
Cathode resistor	R_k	1500	1200	1000	820	680	Ω
Anode current	I_a	0.86	1.18	1.55	1.98	2.45	mA
Voltage gain	V_o/V_i	34	37.5	40	42.5	44	-
Output voltage (I_g = 0.3 μA)	V_o	18	23	26	33	37	V_{RMS}
Total distortion	d_{tot}	8.5	7.0	5.0	4.4	3.6	%
Supply voltage	V_b	200	250	300	350	400	V
Anode resistor	R_a	100	100	100	100	100	kΩ
Grid resistor next stage	R_g'	330	330	330	330	330	kΩ
Cathode resistor	R_k	1800	1500	1200	1000	820	Ω
Anode current	I_a	0.65	0.86	1.11	1.40	1.72	mA
Voltage gain	V_o/V_i	50	54.5	57	61	63	-
Output voltage (I_g = 0.3 μA)	V_o	20	26	30	36	38	V_{RMS}
Total distortion	d_{tot}	4.8	3.9	2.7	2.2	1.7	%
Supply voltage	V_b	200	250	300	350	400	V
Anode resistor	R_a	220	220	220	220	220	kΩ
Grid resistor next stage	R_g'	680	680	680	680	680	kΩ
Cathode resistor	R_k	3.3	2.7	2.2	1.5	1.2	kΩ
Anode current	I_a	0.36	0.48	0.63	0.85	1.02	mA
Voltage gain	V_o/V_i	56	66.5	72	75.5	76.5	-
Output voltage (I_g = 0.3 μA)	V_o	24	28	36	37	38	V_{RMS}
Total distortion	d_{tot}	4.6	3.4	2.6	1.6	1.1	%

As phase inverter



Supply voltage	V_b	250	350	V
Cathode resistor	R_k	1200	820	Ω
Total current	I_{tot}	1.08	1.70	mA
Voltage gain	V_o/V_i	58	62	–
Output voltage (I_g = 0.3 μA)	V_o	35	45	V_{RMS}
Total distortion	d_{tot}	5.5	3.5	%



Supply voltage	V_b	250	350	V
Anode voltage	V_a	65	90	V
Total current	I_{tot}	1	1.2	mA
Cathode resistor	R_k	68	82	kΩ
Anode resistor	R_a	100	150	kΩ
Anode resistor	$R_{a'}$	100	150	kΩ
Voltage gain	V_o/V_i	25	27	–
Output voltage (I_g = 0.3 μA)	V_o	20	35	V_{RMS}
Total distortion	d_{tot}	1.8	1.8	%

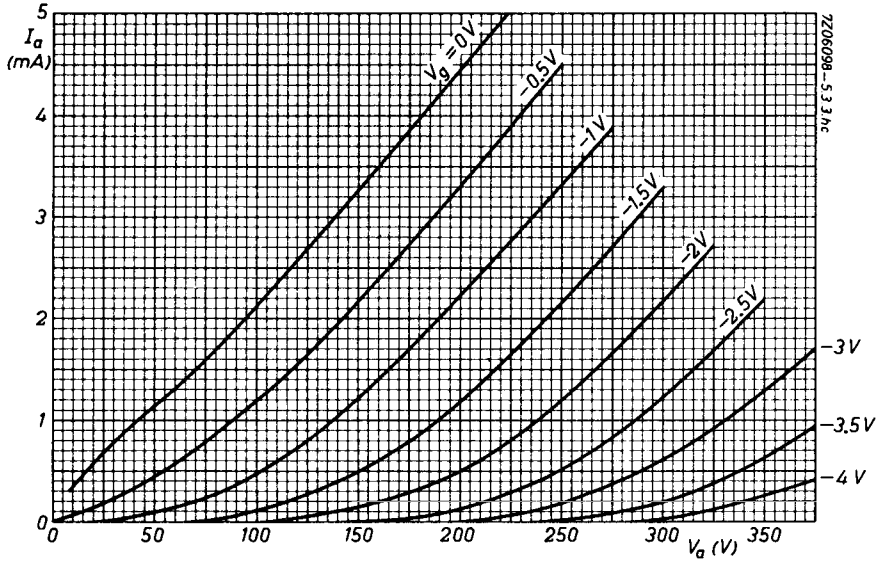
LIMITING VALUES (Design centre rating system)

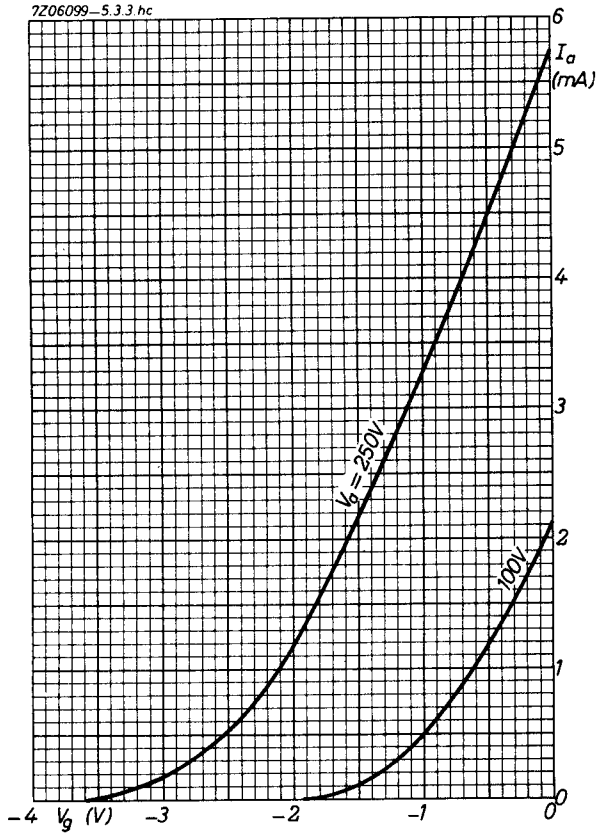
Anode voltage	V_{a_o}	max. 550	V
	V_a	max. 300	V
Anode dissipation	W_a	max. 1	W
Cathode current	I_k	max. 8	mA
Grid voltage	$-V_g$	max. 50	V
Grid resistor (automatic bias)	R_g	max. 2	MΩ
Cathode to heater voltage	V_{kf}	max. 180	V
Cathode to heater circuit resistance in phase splitting circuits	R_{kf}	max. 150	kΩ

REMARK

Microphony and hum

This tube can be used without special precautions against microphony in equipment in which the input voltage $V_i \geqq 5$ mV for an output of 50 mW (or 50 mV for an output of 5 W) provided the average acceleration of the tube is not greater than indicated in the section "Microphonic effect" of the "Application directions". In this case the disturbance level for hum and noise will be better than −60 dB when the centre tap of the heater has been earthed, $R_g \leqq 0.5$ MΩ and the cathode resistor is sufficiently decoupled.




7Z06099—5.3.3 hc
6
I_a
(mA)
5
4
3
2
1
0
V_g = 250V
100V
−4
V_g (V)
−3
−2
−1
0

PHILIPS

Data handbook

Electronic components and materials

ECC83

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