TRIPLE DIODE-TRIODE

Triple diode-triode intended for F.M. and A.M. signal detection and A.F. signal amplification.

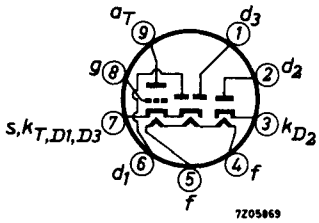
QUICK REFERENCE DATA			
Triode section			
Anode current	I_a	0.8	mA
Transconductance	S	1.45	mA/V
Amplification factor	μ	70	-

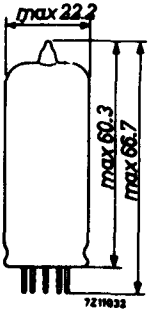
HEATING: Indirect by A.C. or D.C.; parallel supply

Heater voltage	V_f	6.3	V
Heater current	I_f	480	mA

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Noval





CAPACITANCES

Triode section

Grid to all except anode	$C_{g(a)}$		1.9	pF
Anode to all except grid	$C_{a(g)}$		1.4	pF
Anode to grid	C_{ag}		2.0	pF
Grid to heater	C_{gf}	max.	0.04	pF

Diode sections

Diode No.1 to all	C_{d_1}		0.8	pF
Diode No.2 to all	C_{d_2}		4.8	pF
Diode No.3 to all	C_{d_3}		4.8	pF
Cathode (D_2) to all	C_{kD_2}		4.9	pF
Diode No.1 to heater	C_{d_1f}	max.	0.25	pF
Diode No.3 to heater	C_{d_3f}	max.	0.2	pF
Cathode (D_2) to heater	C_{kD_2f}		2.5	pF

Between triode and diode sections

Anode to diode No.1	C_{ad_1}	max.	0.12	pF
Anode to diode No.3	C_{ad_3}	max.	0.1	pF
Anode to cathode (D_2)	C_{akD_2}	max.	0.01	pF
Grid to diode No.1	C_{gd_1}	max.	0.07	pF
Grid to diode No.3	C_{gd_3}	max.	0.02	pF
Grid to cathode (D_2)	C_{gkD_2}	max.	0.005	pF

TYPICAL CHARACTERISTICS Triode section

Anode voltage	V_a	100	250	V
Grid voltage	V_g	-1	-3	V
Anode current	I_a	0.8	1.0	mA
Transconductance	S	1.45	1.4	mA/V
Amplification factor	μ	70	70	-
Internal resistance	R_i	48	50	kΩ

OPERATING CHARACTERISTICS

Triode section as RC coupled A.F. amplifier

Grid resistor R_g = 10 MΩ

Supply voltage	V_b	250	250	250	200	200	200	V
Anode resistor	R_a	220	100	47	220	100	47	kΩ
Grid resistor next stage	R_g'	0.68	0.33	0.15	0.68	0.33	0.15	MΩ
Anode current	I_a	0.76	1.40	2.20	0.56	1.00	1.60	mA
Voltage gain	V_o/V_i	54	47	36	53	44	34	-
Distortion:								
at output voltage V_o = 3 V_{RMS}	d_{tot}	0.2	0.25	0.3	0.3	0.4	0.5	%
at output voltage V_o = 5 V_{RMS}	d_{tot}	0.25	0.5	0.6	0.4	0.6	0.9	%
at output voltage V_o = 8 V_{RMS}	d_{tot}	0.6	0.8	1.0	0.9	1.0	1.5	%
Supply voltage	V_b	170	170	170	100	100	100	V
Anode resistor	R_a	220	100	47	220	100	47	kΩ
Grid resistor next stage	R_g'	0.68	0.33	0.15	0.68	0.33	0.15	MΩ
Anode current	I_a	0.46	0.82	1.25	0.21	0.35	0.52	mA
Voltage gain	V_o/V_i	51	42	32	44	35	26	-
Distortion:								
at output voltage V_o = 3 V_{RMS}	d_{tot}	0.4	0.5	0.6	1.0	1.3	2.0	%
at output voltage V_o = 5 V_{RMS}	d_{tot}	0.5	0.8	1.1	1.7	2.3	4.3	%
at output voltage V_o = 8 V_{RMS}	d_{tot}	1.1	1.3	2.0	–	–	–	%

TYPICAL CHARACTERISTICS Diode sections

Internal resistance diode No.1 Diode voltage V_{d_1} = +10 V	R_{iD_1}	5	kΩ
Internal resistance diode No.2 Diode voltage V_{d_2} = +5 V	R_{iD_2}	200	Ω
Internal resistance diode No.3 Diode voltage V_{d_3} = +5 V	R_{iD_3}	200	Ω
Ratio between R_{iD_2} and R_{iD_3}	R_{iD_2}/R_{iD_3}	min. 0.67 max. 1.5	

MICROPHONY Triode section

No special precautions against microphony are required in circuits where the input voltage is min. 10 mV for 50 mW output of the output tube at frequencies higher than 800 Hz. At lower frequencies the sensitivity may be increased according to figure 1.

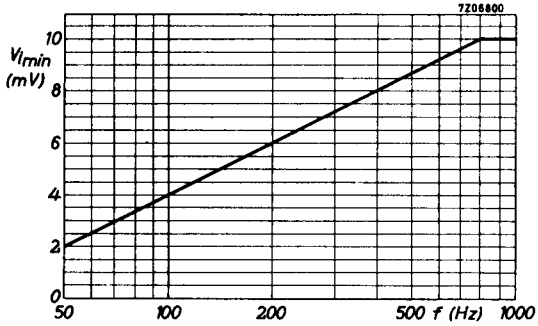


fig. 1

LIMITING VALUES (Design centre rating system)

Triode section

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.	5	mA
Grid resistor	R_g	max.	3	MΩ
Grid resistor (grid current bias)	R_g	max.	22	MΩ
Cathode to heater voltage	V_{kf}	max.	150	V

Diode sections

Diode No.1 voltage, peak negative	$-V_{d_{1p}}$	max.	350	V
Diode No.2 voltage, peak negative	$-V_{d_{2p}}$	max.	350	V
Diode No.3 voltage, peak negative	$-V_{d_{3p}}$	max.	350	V
Diode No.1 current:				
D.C. component	I_{d_1}	max.	1	mA
peak	$I_{d_{1p}}$	max.	6	mA
Diode No.2 current:				
D.C. component	I_{d_2}	max.	10	mA
peak	$I_{d_{2p}}$	max.	75	mA
Diode No.3 current:				
D.C. component	I_{d_3}	max.	10	mA
peak	$I_{d_{3p}}$	max.	75	mA
Cathode (D_2) to heater voltage	$V_{kD_2/f}$	max.	150	V

PHILIPS

Data handbook

Electronic components and materials

EABC80

page	sheet	date
1	1	1970.01
2	2	1970.01
3	3	1970.01
4	4	1970.01
5	5	1970.01
6	FP	1999.08.14