DOUBLE DIODE-PENTODE

Double diode-pentode. Pentode intended for use as R.F., I.F., or A.F. amplifier.

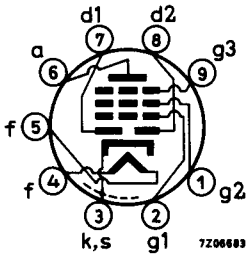
QUICK REFERENCE DATA			
Pentode section			
Variable transconductance			
Anode current	I_a	5	mA
Transconductance	S	2.2	mA/V
Amplification	$\mu_{g_2g_1}$	18	-

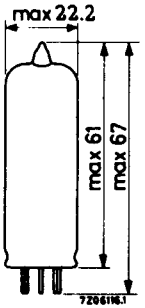
HEATING: Indirect by A.C. or D.C.; parallel or series supply.

Heater voltage	V_f	6.3	V
Heater current	I_f	300	mA

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Noval





CAPACITANCES

Pentode section

Anode to all except grid No.1	$C_{a(g_1)}$	4.9	pF
Grid No.1 to all except anode	$C_{g_1(a)}$	4.2	pF
Anode to grid No.1	C_{ag_1}	max. 0.0025	pF
Grid No.1 to heater	C_{g_1f}	max. 0.07	pF

Diode section

Diode No.1 to all	C_{d_1}	2.2	pF
Diode No.2 to all	C_{d_2}	2.35	pF
Diode No.1 to diode No.2	$C_{d_1d_2}$	max. 0.35	pF
Diode No.1 to heater	C_{d_1f}	max. 0.02	pF
Diode No.2 to heater	C_{d_2f}	max. 0.005	pF

Between diode and pentode sections

Diode No.1 to grid No.1	$C_{d_1g_1}$	max. 0.0008	pF
Diode No.2 to grid No.1	$C_{d_2d_1}$	max. 0.001	pF
Diode No.1 to anode	C_{d_1a}	max. 0.2	pF
Diode No.2 to anode	C_{d_2a}	max. 0.05	pF

OPERATING CHARACTERISTICS

Pentode section as R.F. or I.F. amplifier

Supply voltage	V_b	250		V
Anode resistor	R_a	0		Ω
Grid No.3 voltage	V_{g_3}	0		V
Grid No.2 resistor	R_{g_2}	95		kΩ
Cathode resistor	R_k	300		Ω
Grid No.1 voltage	V_g	−2	−41.5	V
Grid No.2 voltage	V_{g_2}	85	250	V
Anode current	I_a	5	-	mA
Grid No.2 current	I_{g_2}	1.75	-	mA
Transconductance	S	2200	22	μA/V
Internal resistance	R_i	1.4	min.10	MΩ
Amplification factor	$\mu_{g_2g_1}$	18	-	-
Equivalent noise resistance	R_{eq}	6.8	-	kΩ

Pentode section as resistance coupled A.F. amplifier, circuit fig.1.

Supply voltage	V_b	250	250	250	250	V
Anode resistor	R_a	0.22	0.1	0.22	0.1	MΩ
Grid No.2 resistor	R_{g_2}	0.82	0.39	1.0	0.47	MΩ
Grid No.1 resistor	R_{g_1}	1	1	10	10	MΩ
Cathode resistor	R_k	1800	1000	0	0	Ω
Grid No.1 resistor next stage	R_g'	0.68	0.33	0.68	0.33	MΩ
Anode current	I_a	0.75	1.5	0.75	1.5	mA
Grid No.2 current	I_{g_2}	0.30	0.53	0.25	0.50	mA
Voltage gain	V_o/V_i	110	80	160	110	-
Distortion:						
at output voltage V_o = 3 V_{RMS}	d_{tot}	0.8	0.9	0.8	0.8	%
at output voltage V_o = 5 V_{RMS}	d_{tot}	1.3	1.5	1.4	1.4	%
at output voltage V_o = 8 V_{RMS}	d_{tot}	2.0	2.2	2.1	2.1	%

OPERATING CHARACTERISTICS (continued)

Pentode section, triode connected (g_2 connected to anode) as resistance coupled A.F. amplifier.

Supply voltage	V_b	250	250	250	250	V
Anode resistor	R_a	0.1	0.047	0.1	0.047	MΩ
Grid No.1 resistor	R_{g_1}	1	1	10	10	MΩ
Cathode resistor	R_k	820	560	0	0	Ω
Grid No.1 resistor next stage	$R_{g'}$	0.33	0.15	0.33	0.15	MΩ
Anode current	I_a	2.08	4.10	2.16	4.50	mA
Voltage gain	V_o/V_i	14	13	15	15	–
Distortion:						
at output voltage V_o = 3 V_{RMS}	d_{tot}	1.6	1.3	2.0	1.7	%
at output voltage V_o = 5 V_{RMS}	d_{tot}	2.5	2.0	3.1	2.7	%
at output voltage V_o = 8 V_{RMS}	d_{tot}	4.3	2.9	4.8	4.1	%

LIMITING VALUES (Design centre rating system)

Pentode section

Anode voltage	V_{a_o}	max.	550	V
	V_a	max.	300	V
Anode dissipation	W_a	max.	1.5	W
Grid No.2 voltage	$V_{g_{2_o}}$	max.	550	V
at anode current I_a = max. 2.5 mA	V_{g_2}	max.	300	V
at anode current I_a = 5 mA	V_{g_2}	max.	125	V
Grid No.2 dissipation	W_{g_2}	max.	0.3	W
Cathode current	I_k	max.	10	mA
Grid resistor, automatic bias	R_{g_1}	max.	3	MΩ
Grid resistor, grid current bias	R_{g_1}	max.	22	MΩ
Cathode to heater voltage	V_{kf}	max.	100	V

Microphony

No special precautions against microphony are required in circuits where the input voltage is min. 25 mV for an output of 50 mW of the output tube.

LIMITING VALUES (continued)

Diode section

Diode No.1 voltage, negative peak	$-V_{d_p}$	max.	350	V
Diode No.2 voltage, negative peak	$-V_{d_p}$	max.	350	V
Diode No.1 current	I_{d_1}	max.	0.8	mA
Diode No.2 current	I_{d_2}	max.	0.8	mA
Diode No.1 current, peak	$I_{d_{1p}}$	max.	5	mA
Diode No.2 current, peak	$I_{d_{2p}}$	max.	5	mA
Cathode to heater voltage	V_{kf}	max.	100	V

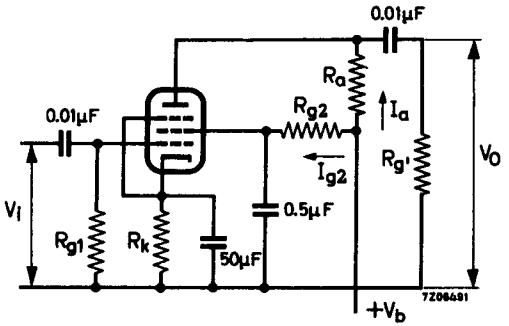


fig.1

PHILIPS

Data handbook

Electronic components and materials

EBF80

page	sheet	date
1	1	1969.12
2	2	1969.01
3	3	1969.01
4	4	1969.01
5	5	1969.01
6	FP	1999.08.14