EBC 3 Double-diode triode

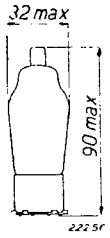
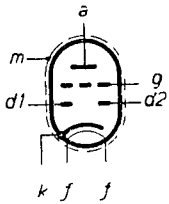


Fig. 1
Dimensions in mm.

The double-diode triode EBC 3 comprises a triode in combination with a double-diode unit, in a common envelope. These two systems are served by a single cathode.

The diode section may be employed for detection and delayed automatic gain control and the triode for A.F. amplification or for other purposes. The A.F. amplification, which may effected by means of resistance coupling, is about 20 times and this is ample for most purposes. Both the diodes have their own separate external connections and the grid connection of the triode is at the top of the valve.



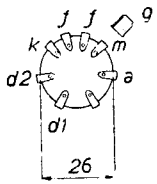


Fig. 2
Arrangement of electrodes and base connections.

HEATER RATINGS

Heating: indirect, by A.C. or D.C.; series or parallel supply.

Heater voltage	V_f	= 6.3 V
Heater current	I_f	= 0.200 A

CAPACITANCES

C_{kd_1}	= 1.9	$\mu\mu$F	C_{ag}	= 1.3	$\mu\mu$F
C_{kd_2}	= 2.5	$\mu\mu$F	C_{ak}	= 3	$\mu\mu$F
$C_{d_1d_2}$	< 0.5	$\mu\mu$F	C_{gk}	= 2.9	$\mu\mu$F
C_{gd_1}	< 0.005	$\mu\mu$F	$C_{(d_1+d_2)g}$	< 0.006	$\mu\mu$F
C_{gd_2}	< 0.005	$\mu\mu$F	$C_{(d_1+d_2)a}$	< 1	$\mu\mu$F
C_{gf}	< 0.002	$\mu\mu$F			

OPERATING DATA

Triode section:

Anode voltage	V_a =	100 V	200 V	275 V
Grid bias	V_g =	—2.1 V	—4.3 V	—6.25 V
Anode current	I_a =	2 mA	4 mA	5 mA
Amplification factor	μ =	30	30	30
Mutual conductance	S =	1.6 mA/V	2.0 mA/V	2.0 mA/V
Internal resistance	R_i =	19,000 ohms	15,000 ohms	15,000 ohms

MAXIMUM RATINGS

Triode section:

V_{ao}	= max. 550 V		
V_a	= max. 300 V		
W_a	= max. 1.5 W		
I_k	= max. 10 mA		
V_g (I_g = + 0.3 μA)	= max. —1.3 V	Diode section:	
R_{gk} (automatic)	= max. 3 M ohms	V_{d_1} (peak value)	= max. 200 V
R_{gk} (fixed)	= max. 1 M ohm	I_{d_1} (D.C. value)	= max. 0.8 mA
V_{fk}	= max. 75 V [1])	V_{d_2} (peak value)	= max. 200 V
R_{fk}	= max. 20,000 ohms	I_{d_2} (D.C. value)	= max. 0.8 mA

[1]) Direct voltage or effective value of alternating voltage.

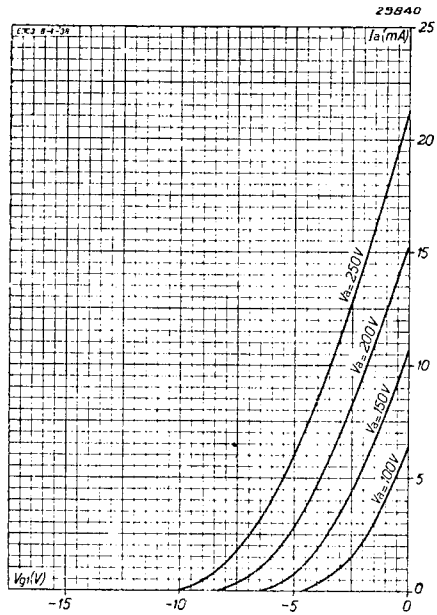


Fig. 3
Anode current as a function of the grid bias at different anode voltages.

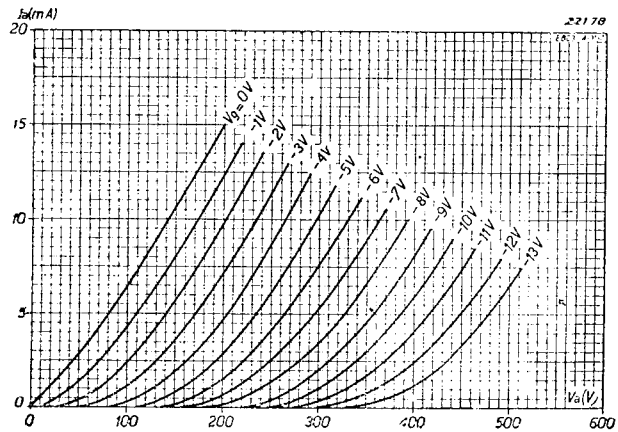


Fig. 4
Anode current as a function of the anode voltage at different values of grid bias.

The triode can also be employed as oscillator in conjunction with the variable-mu frequency-changer heptode EH 2.
To avoid feedback from the triode to the diodes, these two units are screened from each other, the screen being connected to the cathode. The metallizing is provided with a separate contact in the valve base.

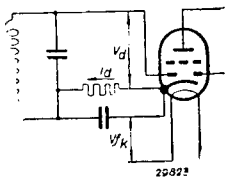


Fig. 5
Definition of *Vd* and *Id*

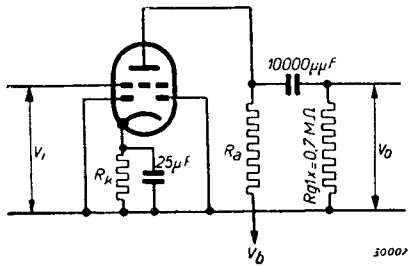


Fig. 6
Circuit upon which the measurements given in the table are based.

The diode shown as d_2 in the diagram of base connections (Fig. 2) should preferably be employed for detection. The other diode (d_1) can then serve for other purposes such as delayed automatic gain control. The curves relating to the rise in direct voltage (Δ V) across the grid leak, as a function of the unmodulated R.F. signal voltage, as well as that with respect to the increase in the A.F. voltage (V_{LF}) at one of the diodes with a grid leak of 0.5 M ohm, are the same as for the EB 4 (see Fig. 3, p. 22).

EBC 3 employed as A.F. amplifier, resistance-coupled to different output valves

Supply voltage Vb V	Anode coupling resistor Ra megohms	Anode current Ia mA	Cathode resistor Rk ohms	Voltage gain $\frac{Vo}{Vi}$	When used with the EL 2 as output valve $Va = Vg_2 = 250$ V: Alternating output voltage Vo Veff	When used with the EL 2 as output valve $Va = Vg_2 = 250$ V: Total distortion in the pre-amplifier $d$tot %	When used with the EL 3 or EL 6 as output valve $Va = Vg_2 = 250$: Alternating output voltage Vo Veff	When used with the EL 3 or EL 6 as output valve $Va = Vg_2 = 250$: Total distortion in pre-amplifier $d$tot %	When used with the EL 5 as output valve $Va = 250$ V. $Vg_2 = 275$ V: Alternating output voltage Vo Veff	When used with the EL 5 as output valve $Va = 250$ V. $Vg_2 = 275$ V: Total distortion in pre-amplifier $d$tot %	When used with the AD 1 as output valve $Va = 250$ V: Alternating output voltage Vo Veff	When used with the AD 1 as output valve $Va = 250$ V: Total distortion in pre-amplifier $d$tot %	Remarks
300	0.2	0.9	4,000	26	11.2	< 1	3.7	< 1	8.5	< 1	31	1.8	For receivers with heaters fed in parallel
250	0.2	0.75	4,000	26	11.2	< 1	3.7	< 1	8.5	< 1	31	2.2	
300	0.1	1.5	2,500	25	11.2	< 1	3.7	< 1	8.5	< 1	31	2.0	
250	0.1	1.3	2,500	25	11.2	< 1	3.7	< 1	8.5	< 1	31	2.6	
300	0.05	2.3	2,000	22	11.2	< 1	3.7	< 1	8.5	< 1	31	2.0	
250	0.05	1.8	2,000	22	11.2	< 1	3.7	< 1	8.5	< 1	31	2.6	
					When used with the CL 1 as output valve		When used with the CL 2 as output valve		When used with the CL 4 as output valve		When used with the EL 2 as output valve		
200 [1])	0.2	0.35	12,500	22	9.6	1.7	10	1.8	5.0	1.0	8.5	1.6	For receivers with heaters fed in series
150 [1])	0.2	0.25	12,500	21	—	—	10	2.7	4.0	1.0	6.5	1.7	
100 [1])	0.2	0.20	12,500	19	—	—	10	4.6	2.4	1.0	—	-	
200 [1])	0.1	0.55	8,000	21	9.6	2.1	10	2.3	5.0	1.2	8.5	1.8	
150 [1])	0.1	0.45	8,000	20	—	—	10	3.0	4.0	1.2	6.5	1.8	
100 [1])	0.1	0.30	8,000	18	—	—	10	4.9	2.4	1.2	—	—	
200 [1])	0.05	0.8	6,000	19	9.6	3.0	10	3.2	5.0	1.5	8.5	2.6	
150 [1])	0.05	0.6	6,000	18	—	—	10	4.3	4.0	1.6	6.5	3.0	
100 [1])	0.05	0.4	6,000	17	—	—	10	7.0	2.4	1.6	—	—	

[1]) also anode voltage of the output valve.