

Netzröhre für W-Heizung  
indirekt geheizt  
Parallelspeisung

AC-Heating  
indirectly heated  
connected in parallel

# TELEFUNKEN

**EL 34**

Endpentode  
Power pentode

Meßwerte · Measuring values	$U_f$	<b>6,3</b>	V
	$I_f$	1,5	A
$U_a$	<b>250</b>	V	
$U_{g3}$	<b>0</b>	V	
$U_{g2}$	<b>265</b>	V	
$U_{g1}$	-13,5	V	
$I_a$	<b>100</b>	mA	
$I_{g2}$	14,9	mA	
S	11	mA/V	
$R_i$	15	k $\Omega$	
$\mu_{g2/g1}$	11		
$U_{g1e}$ ( $I_{g1} = +0,3 \mu A$ )	-1,3	V	

## Betriebswerte · Typical operation

Eintakt-A-Betrieb · Class A-amplifier

				Als Triode geschaltet		
				Connected as Triode		
				$g_2$ an a, $g_3$ an k		
$U_b$	<b>265</b>	<b>265</b>	V	$U_{ag2}$	<b>375</b>	V
$U_a$	<b>250</b>	<b>250</b>	V	$R_k$	<b>370</b>	$\Omega$
$U_{g3}$	<b>0</b>	<b>0</b>	V	$I_a + I_{g2}$	70	mA
$R_{g2}$	<b>2</b>	—	k $\Omega$	$I_a + I_{g2}$ (ausgest.)	74	mA
$U_{g1}$	-14,5	-13,5	V	$R_a$	3	k $\Omega$
$I_a$	70	<b>100</b>	mA	$U_{g1eff}$ (N)	18,9	V
$I_{g2}$	10	14,9	mA	N (8%)	6	W
$R_a$	3	2	k $\Omega$	$U_{g1eff}$ (50 mW)	1,7	V
$U_{g1eff}$ (N)	9,3	8,7	V			
N (10%)	8	11	W			
$U_{g1eff}$ (50 mW)	0,65	0,5	V			

## Betriebswerte · Typical operation

2 Röhren in Gegentakt-AB-Betrieb

2 tubes push-pull, class AB

				Als Trioden geschaltet		
				Connected as Triode		
				$g_2$ an a, $g_3$ an k		
$U_b$	<b>375</b>		V	$U_{ag2}$	<b>400</b>	V
$U_a + U_{Rk}$	<b>355</b>		V	$R_k^{1)}$	<b>220</b>	$\Omega$
$U_{g3}$	<b>0</b>		V	$I_a + I_{g2}$	2×65	mA
$R_{g2}^{1)}$	<b>470</b>		$\Omega$	$I_a + I_{g2}$ (ausgest.)	2×71	mA
$R_k^{1)}$	<b>130</b>		$\Omega$	$R_{aa}$	5	k $\Omega$
$I_a$	2×75		mA	$U_{g1eff}$ (N)	22	V
$I_a$ ausgest.	2×95		mA	N (3%)	16,5	W
$I_{g2}$	2×11,5		mA			
$I_{g2}$ ausgest.	2×22,5		mA			
$R_{aa}$	3,4		k $\Omega$			
$U_{g1eff}$ (N)	21		V			
N (5%)	35		W			

1) gemeinsam · common.



2 Röhren in Gegentakt-B-Betrieb  
2 tubes push-pull, class B

$U_b$	<b>350</b>	<b>375</b>	<b>400</b>	<b>425</b>	V
$U_a$	<b>325</b>	<b>350</b>	<b>375</b>	<b>400</b>	V
$U_{g3}$	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	V
$R_{g2}^{1)}$	<b>470</b>	<b>470</b>	<b>1000</b>	<b>1000</b>	$\Omega$
$U_{g1}$	<b>-32</b>	<b>-32</b>	<b>-38</b>	<b>-38</b>	V
$I_a$	2×35	2×35	2×30	2×30	mA
$I_a$ ausgest.	2×93	2×120	2×100	2×120	mA
$I_{g2}$	2×4,7	2×4,7	2×4,4	2×4,4	mA
$I_{g2}$ ausgest.	2×25	2×25	2×25	2×25	mA
$R_{aa}$	3,8	2,8	4	3,4	k $\Omega$
$U_{g1eff}$ (N)	22,7	22,7	27	27	V
N	36	44	45	55	W
$k_{ges}$	6	5	6	5	%

$U_{ba}$	<b>475</b>	<b>500</b>	<b>750</b>	<b>800</b>	V
$U_a$	<b>450</b>	<b>475</b>	<b>725</b>	<b>775</b>	V
$U_{bg2}$	<b>375</b>	<b>400</b>	<b>375</b>	<b>400</b>	V
$R_{g2}^{1)}$	<b>750</b>	<b>750</b>	<b>750</b>	<b>750</b>	$\Omega$
$U_{g3}$	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	V
$U_{g1}$	<b>-36</b>	<b>-36</b>	<b>-39</b>	<b>-39</b>	V
$I_a$	2×30	2×30	2×25	2×25	mA
$I_a$ ausgest.	2×102	2×125	2×84	2×91	mA
$I_{g2}$	2×4	2×4	2×3	2×3	mA
$I_{g2}$ ausgest.	2×25	2×25	2×19	2×19	mA
$R_{aa}$	5	4	11	11	k $\Omega$
$U_{g1eff}$ (N)	25,8	25,8	23,4	23,4	V
N	58	70	90	100	W
$k_{ges}$	6	5	6	5	%

1)  $R_{g2}$  gemeinsam.  
 $R_{g2}$  common.

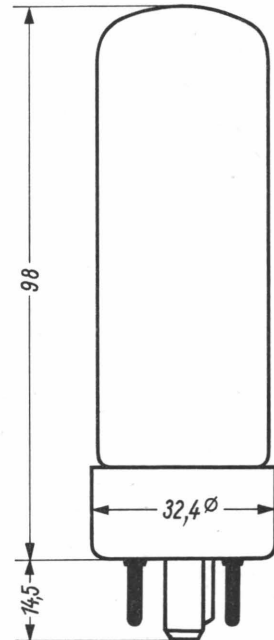


**Grenzwerte · Maximum ratings**

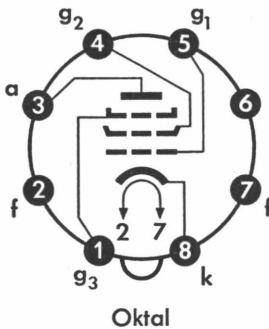
$U_{a0}$	<b>2000</b>	V
$U_a$	<b>800</b>	V
$N_a$	<b>25</b>	W
$N_{a \text{ ausgest.}}$	<b>27,5</b>	W
$U_{g20}$	<b>800</b>	V
$U_{g2}$	<b>425</b>	V
$N_{g2}$	<b>8</b>	W
$I_k$	<b>150</b>	mA
$R_{g1}^{1)}$	<b>0,7</b>	M $\Omega$
$R_{g1}^{2)}$	<b>0,5</b>	M $\Omega$
$U_{f/k}$	<b>100</b>	V
$R_{f/k}$	<b>20</b>	k $\Omega$
$t_{\text{Kolben}}$	<b>245</b>	$^{\circ}\text{C}$

**Kapazitäten · Capacitances**

$C_{g1}$	ca. 15,2	pF
$C_a$	ca. 8,4	pF
$C_{g1/a}$	< 1,1	pF
$C_{g1/f}$	< 1	pF
$C_{k/f}$	ca. 10	pF

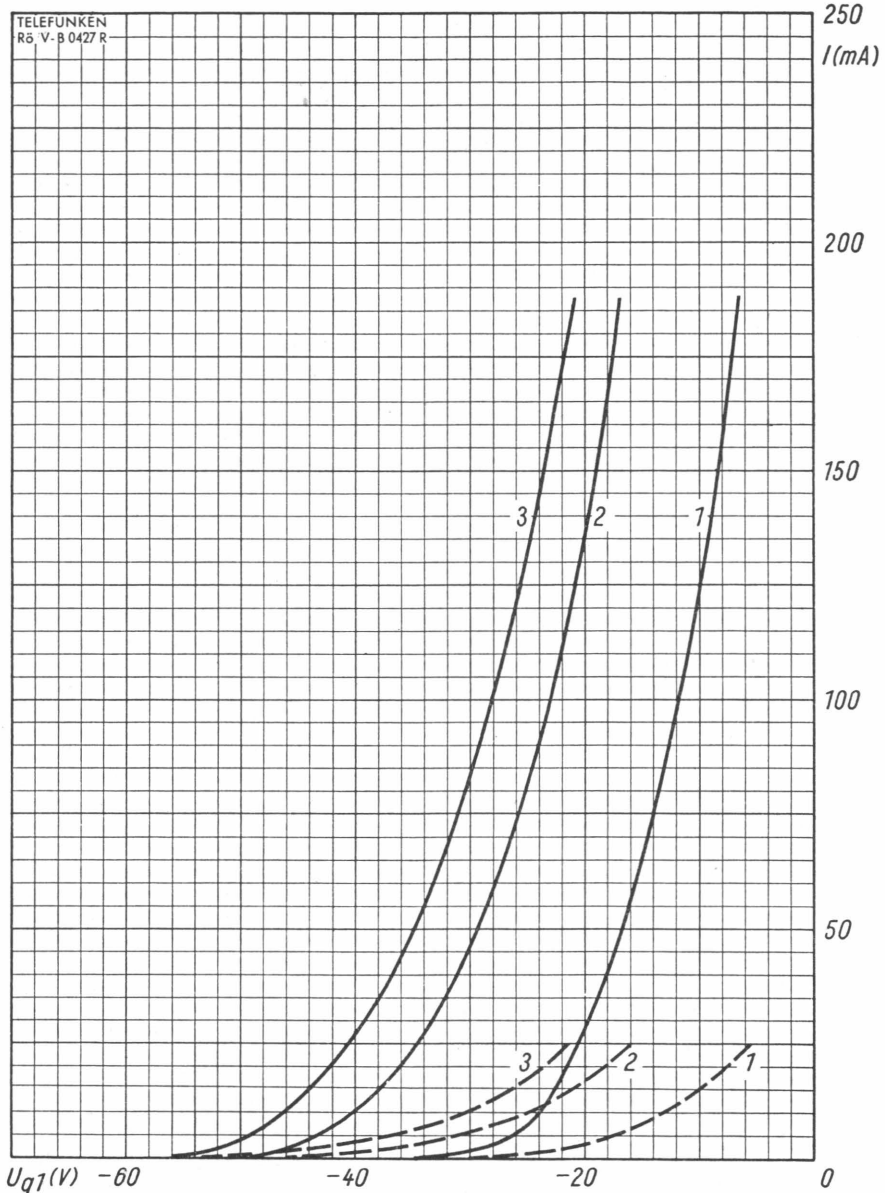
 max. Abmessungen  
 max. dimensions

 Gewicht · Weight  
 max. 50 g

- 1) A-Betrieb, AB-Betrieb · class A, class AB  
 2) B-Betrieb · class B

**Sockelschaltbild  
 Base connection**


Freie Stifte bzw. freie Fassungskontakte  
 dürfen nicht als Stützpunkte für Schalt-  
 mittel benutzt werden.

Free pins not to be connected externally

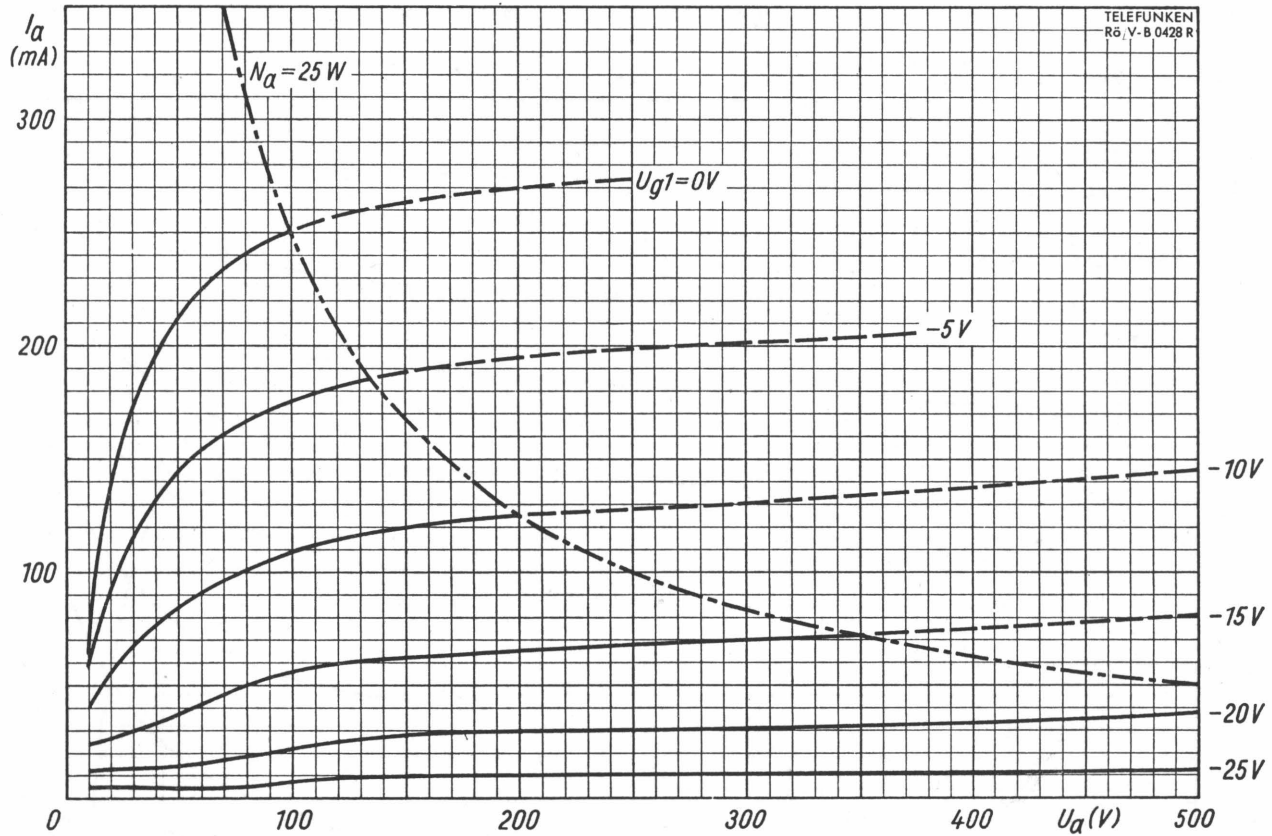


$$I_a, I_{g2} = f(U_{g1})$$

- 1  $U_a = 250$  V,  $U_{g3} = 0$  V,  $U_{g2} = 250$  V
- 2  $U_a = 350$  V,  $U_{g3} = 0$  V,  $U_{g2} = 375$  V
- 3  $U_a = 400$  V,  $U_{g3} = 0$  V,  $U_{g2} = 425$  V

—  $I_a$     - - - -  $I_{g2}$





$$I_a = f(U_a)$$

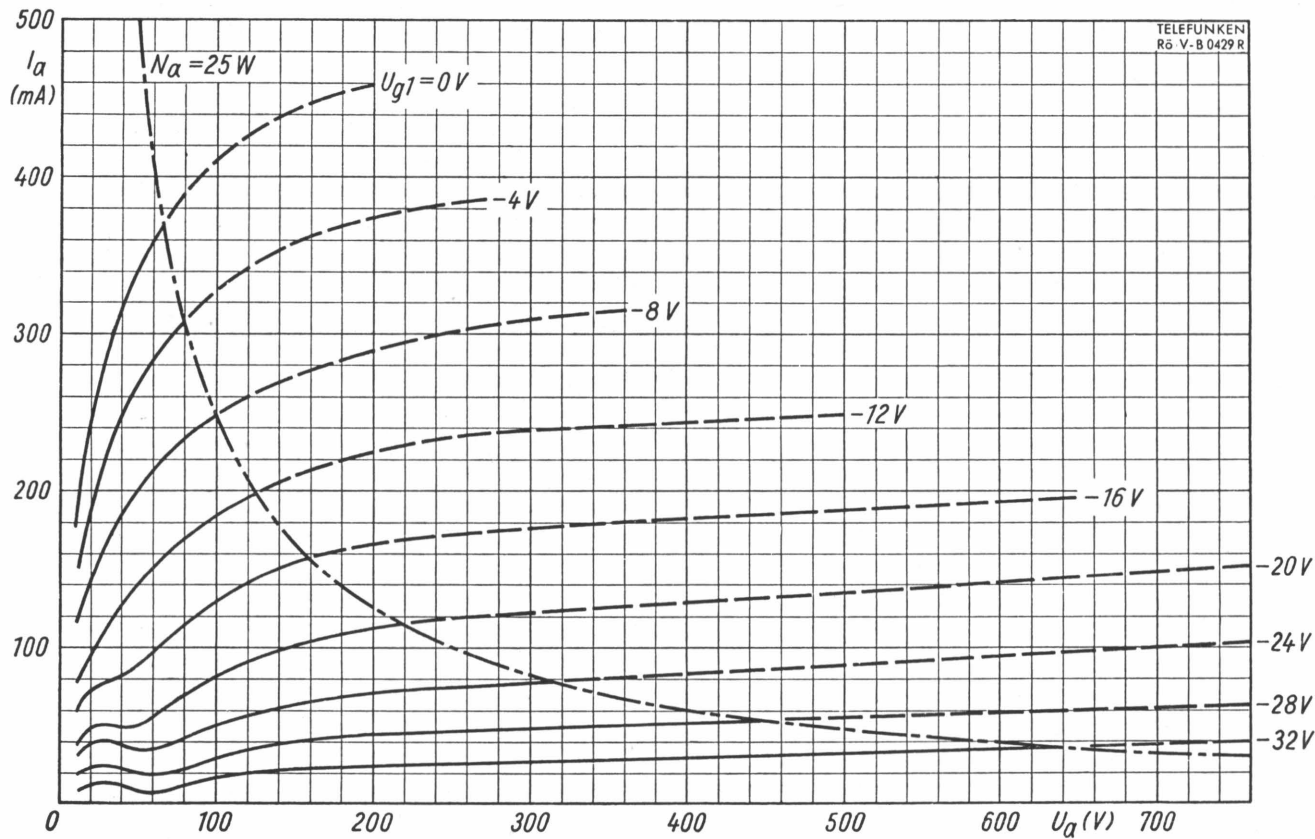
$$U_{g3} = 0 \text{ V}$$

$$U_{g2} = 250 \text{ V}$$

$$U_{g1} = \text{Parameter}$$

TELEFUNKEN

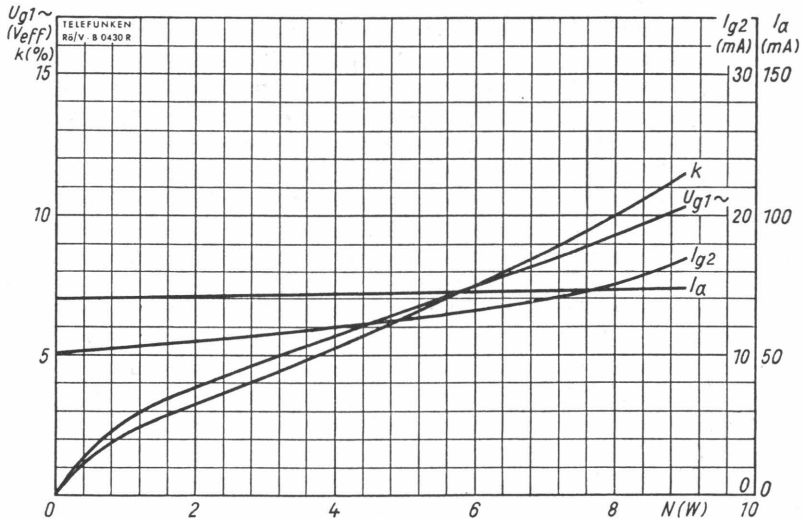
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$I_a = f(U_a)$

- $U_{g3} = 0 V$
- $U_{g2} = 360 V$
- $U_{g1} = \text{Parameter}$





**Eintakt-A-Betrieb · Class-A-amplifier**

$$U_b = 265 \text{ V}$$

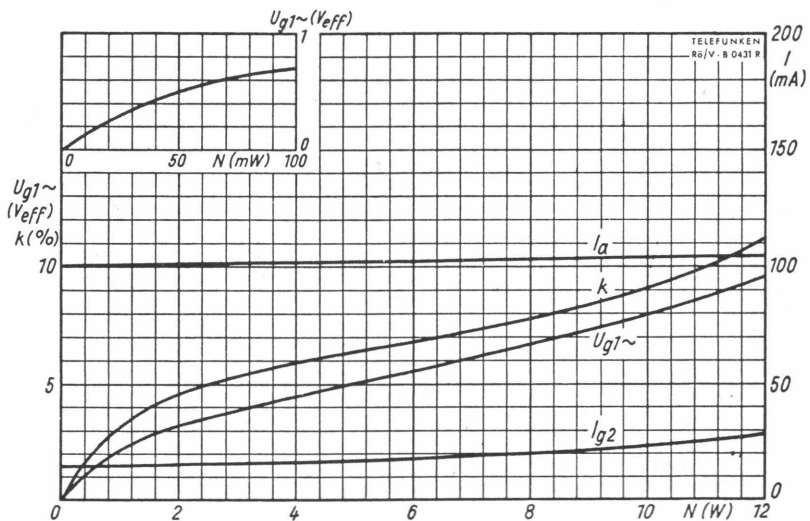
$$U_{g3} = 0 \text{ V}$$

$$R_a = 3 \text{ k}\Omega$$

$$U_a = 250 \text{ V}$$

$$U_{g1} = -14,5 \text{ V}$$

$$R_{g2} = 2 \text{ k}\Omega$$



**Eintakt-A-Betrieb · Class-A-amplifier**

$$U_b = 265 \text{ V}$$

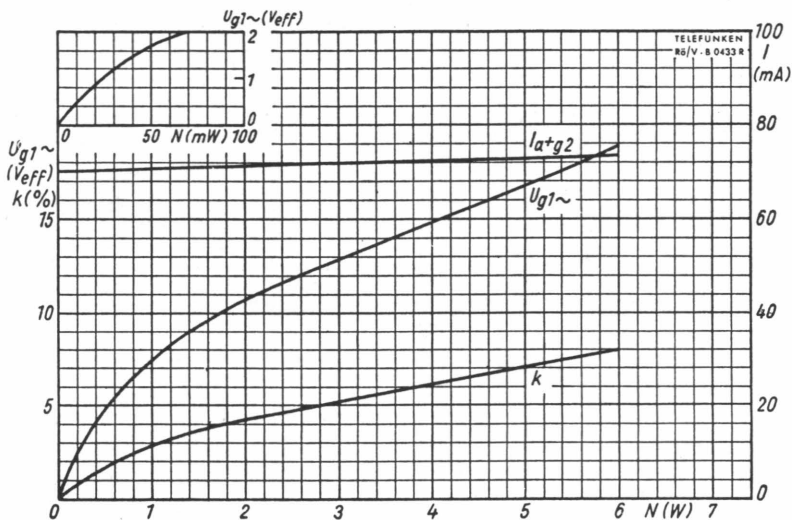
$$U_{g3} = 0 \text{ V}$$

$$R_a = 2 \text{ k}\Omega$$

$$U_a = 250 \text{ V}$$

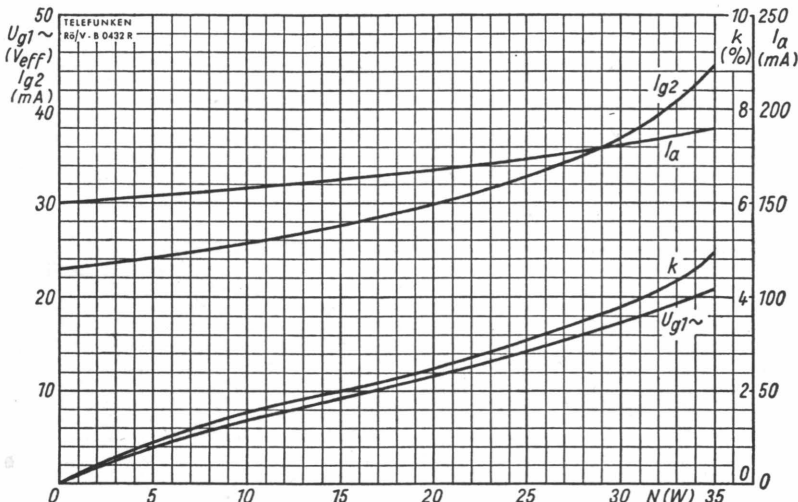
$$U_{g1} = -13,5 \text{ V}$$

$$R_{g2} = 0 \text{ k}\Omega$$



**Eintakt-A-Betrieb als Triode, g<sub>2</sub> an a**  
 Connected as triode, g<sub>2</sub> to a, class-A-amplifier

$U_b = 375 \text{ V}$                        $R_k = 370 \text{ } \Omega$   
 $U_{g3} = 0 \text{ V}$                           $R_a = 3 \text{ k}\Omega$

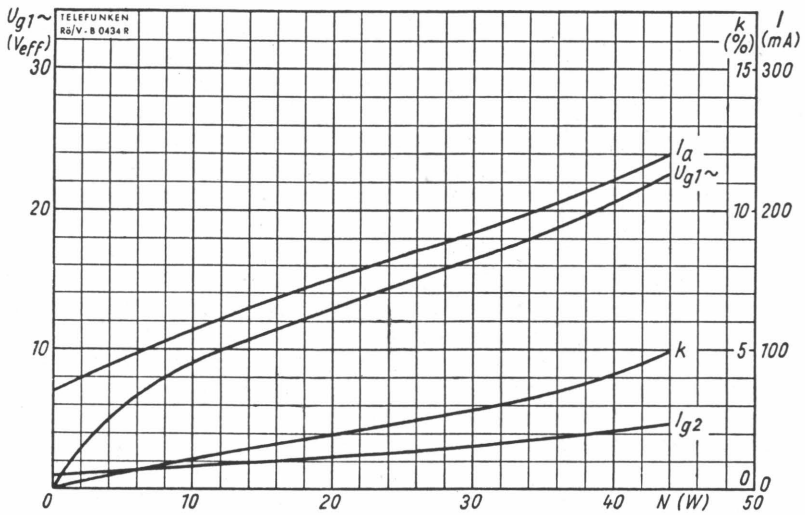


**2 Röhren in Gegentakt-AB-Betrieb** · 2 tubes push-pull, class AB

$U_b = 375 \text{ V}$                        $R_k = 130 \text{ } \Omega$   
 $R_{g2} = 470 \text{ } \Omega$                      $R_{aa} = 3,4 \text{ k}\Omega$

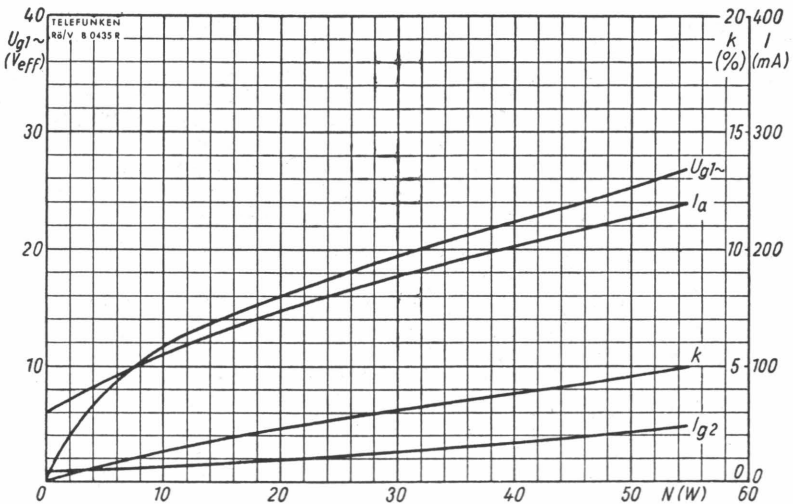






2 Röhren in Gegentakt-B-Betrieb • 2 tubes push-pull, class B

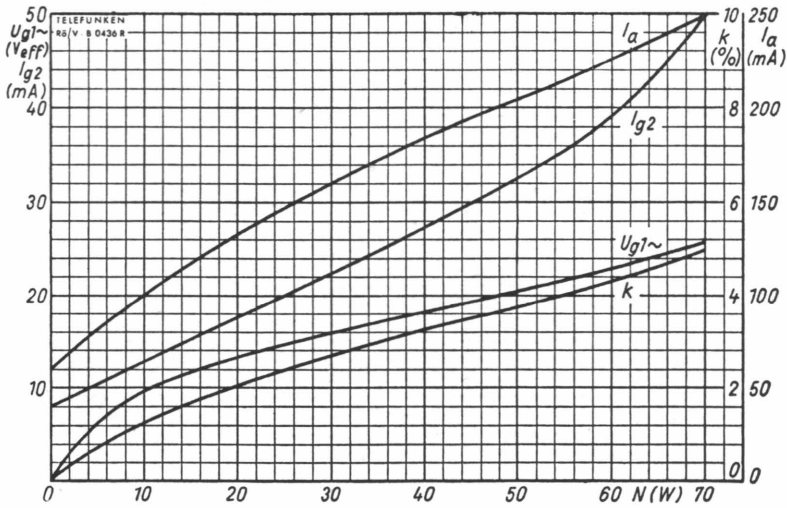
$U_b = 375 \text{ V}$                        $R_{g2} = 470 \text{ } \Omega$   
 $U_{g1} = -32 \text{ V}$                        $R_{aa} = 2,8 \text{ k}\Omega$



2 Röhren in Gegentakt-B-Betrieb • 2 tubes push-pull, class B

$U_b = 425 \text{ V}$                        $R_{g2} = 1 \text{ k}\Omega$   
 $U_{g1} = -38 \text{ V}$                        $R_{aa} = 3,4 \text{ k}\Omega$





2 Röhren in Gegentakt-B-Betrieb · 2 tubes push-pull, class B

$U_{ba} = 500 \text{ V}$

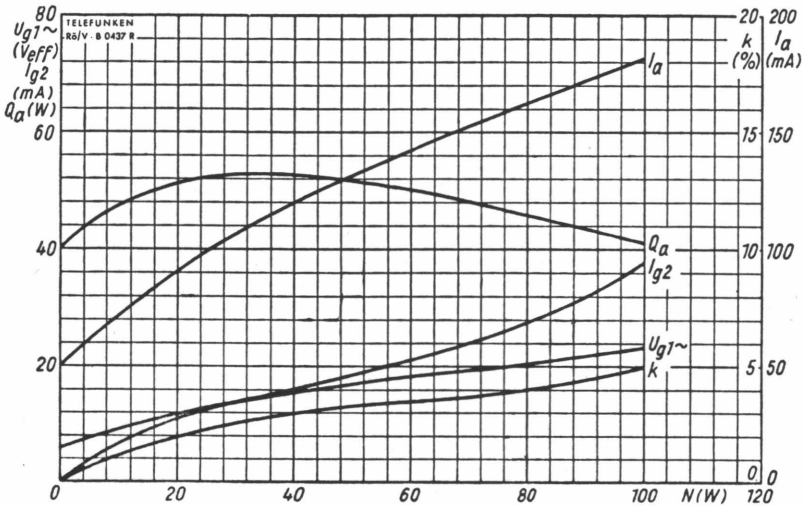
$U_{g3} = 0 \text{ V}$

$R_{g2} = 750 \Omega$

$U_{bg2} = 400 \text{ V}$

$U_{g1} = -36 \text{ V}$

$R_{aa} = 4 \text{ k}\Omega$



2 Röhren in Gegentakt-B-Betrieb · 2 tubes push-pull, class B

$U_{ba} = 800 \text{ V}$

$U_{g3} = 0 \text{ V}$

$R_{g2} = 750 \Omega$

$U_{bg2} = 400 \text{ V}$

$U_{g1} = -39 \text{ V}$

$R_{aa} = 11 \text{ k}\Omega$

