



The textbook Grounded Cathode Amplifier. The most common and easiest of tube circuits. The triode is cathode biased. The output is phase inverted. The gain never exceeds the  $\mu$  of the triode. Still, a very good line stage can be made from this circuit.

## Tube

Tube = ECC82  
 Number = 1  
 $\mu = 17$   
 $g_m = 2.2 \text{ ma/v}$   
 $r_p = 7700 \text{ ohm}$   
 $I_{max} = 25 \text{ ma}$   
 $V_{max} = 300 \text{ v}$   
 $W_{max} = 2.75 \text{ w}$   
 $C_{gp} = 1.5 \text{ pf}$

## Circuit Setup

$R_k = 470 \text{ ohm}$   
 $R_k$  bypassed  
 $R_{in} = 1 \text{ k}$   
 $R_L = 100 \text{ k}$   
 $R_a = 4.7 \text{ k}$   
 $Cap = 1 \mu\text{f}$   
 $I = 4.5 \text{ ma}$   
 $V_{B+} = 110 \text{ v}$

## AC Results

Gain = 6.26	Gain dB = 15.9 dB
Phase = inverts	PSRR = -4.39 dB
Z input = 459 k	Z output = 2.84 k
F -3dB low = 1.55 hz	F -3dB high = > 1 mhz

## DC Results

$V_{tube} = 86.7 \text{ v}$	$V_{Ra} = 21.1 \text{ v}$
$V_{bias} = -2.18 \text{ v}$	$V_g \text{ DC} = 0 \text{ v}$
$V_{th} = 3.28 \text{ v}$	$V_{max \text{ out}} = -20/+20.2 \text{ v}$
Plate Dis. = 390 mw	Total Dis. = 495 mw
$R_a \text{ Dis.} = 95 \text{ mw}$	$W_{Rk} = 10 \text{ mw}$

## Calculated Part Values

$R_k = 487 \text{ ohm}$	$Cap_{Rk} = 35 \mu\text{f}$
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