



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 μ of the triode. Still, a very good line stage can be made from this circuit.

Tube

Tube = 6J5
 Number = 1
 $\mu = 20$
 $g_m = 2.6 \text{ ma/v}$
 $r_p = 7700 \text{ ohm}$
 $I_{max} = 20 \text{ ma}$
 $V_{max} = 450 \text{ v}$
 $W_{max} = 3.75 \text{ w}$
 $C_{gp} = 4 \text{ pf}$

Circuit Setup

$R_k = 510 \text{ ohm}$
 R_k bypassed
 $R_{in} = 25 \text{ k}$
 $R_L = 100 \text{ k}$
 $R_a = 66 \text{ k}$
 $Cap = 1 \mu\text{f}$
 $I = 3.33 \text{ ma}$
 $V_{B+} = 300 \text{ v}$

AC Results

Gain = 16.76	Gain dB = 24.5 dB
Phase = inverts	PSRR = -20.2 dB
Z input = 106 k	Z output = 6.45 k
F -3dB low = 1.5 hz	F -3dB high = 95 khz

DC Results

V tube = 78.5 v	$V_{Ra} = 220 \text{ v}$
$V_{bias} = -1.7 \text{ v}$	$V_g \text{ DC} = 0 \text{ v}$
$V_{th} = 12.3 \text{ v}$	$V_{max \text{ out}} = -46/+132 \text{ v}$
Plate Dis. = 261 mw	Total Dis. = 999 mw
$R_a \text{ Dis.} = 732 \text{ mw}$	$W_{Rk} = 6 \text{ mw}$

Calculated Part Values

$R_k = 510 \text{ ohm}$	$Cap_{Rk} = 36 \mu\text{f}$
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