



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 = 12AX7
 Number = 1
 mu = 100
 gm = 1.6 ma/v
 rp = 62500 ohm
 I_{max} = 2.5 ma
 V_{max} = 300 v
 W_{max} = 1 w
 C_{gp} = 1.7 pf

Circuit Setup

R_k = 470 ohm
 R_k bypassed
 R_{in} = 1 k
 R_L = 100 k
 R_a = 4.7 k
 Cap = 1 μf
 I = 1.3ma
 V B+ = 110v

AC Results

Gain = 6.7	Gain dB = 16.5 dB
Phase = inverts	PSRR = -1 dB
Z input = 411 k	Z output = 4.19 k
F -3dB low = 1.53 hz	F -3dB high = > 1 mhz

DC Results

V tube = 103 v	V _{Ra} = 6.11 v
V _{bias} = -0.63 v	V _{g DC} = 0 v
V _{th} = 0.87 v	V _{max out} = -2/+5.84 v
Plate Dis. = 134 mw	Total Dis. = 143 mw
R _a Dis. = 8 mw	W R _k = 1 mw

Calculated Part Values

R _k = 475 ohm	Cap R _k = 30 μf
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