



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 = 12B4
 Number = 1
 mu = 6.5
 gm = 6.3 ma/v
 rp = 1030 ohm
 Imax = 30 ma
 Vmax = 550 v
 Wmax = 6 w
 Cgp = 4.8 pf

Circuit Setup

Rk = 1.6 k
 Rk bypassed
 Rin = 1.1 k
 RL = 470 k
 Ra = 10 k
 Cap = 1µf
 I = 15ma
 V B+ = 350v

AC Results

Gain = 5.88	Gain dB = 15.4 dB
Phase = inverts	PSRR = -20.6 dB
Z input = 220 k	Z output = 932 ohm
F -3dB low = 0.34 hz	F -3dB high = > 1 mhz

DC Results

V tube = 176 v	VRa = 150 v
Vbias = -23.8 v	Vg DC = 0 v
Vth = 25.5 v	Vmax out = -167/+147 v
Plate Dis. = 2.64 w	Total Dis. = 5.25 w
Ra Dis. = 2.25 w	W Rk = 360 mw

Calculated Part Values

Rk = 1.58 k	Cap Rk = 55 µf
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