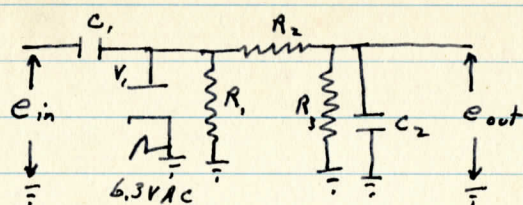


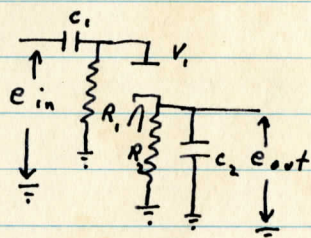
Hi: Frequency
Circuits



Std = 1000 KC at
full out put
of Sig. Gen

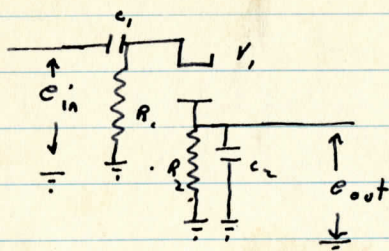
$V_1 = 6H6 (Jan)$

$C_1 \quad e_{in} \quad R_1 \quad R_2 \quad R_3 \quad C_2 \quad e_{out}$



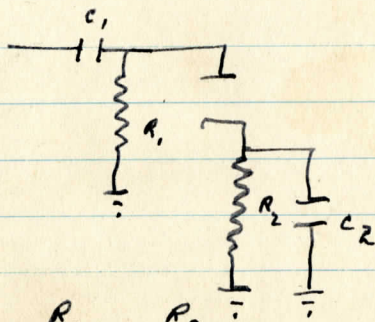
$V_1 = JAN 6H6$

$C_1 \quad R_1 \quad R_2 \quad C_2 \quad e_{in} \quad e_{out}$

V₁ = JAN 6H6

C_1	R_1	R_2	C_2	e_{in}	e_{out} e_o, e_s, A_e
5 μF	1 meg	11 meg	100 μF	5	-1.3 -1.31 -101
.05 μF	1 meg	11 meg	100 μF	5	-1.3 -1.41 -11
50 μF	1 meg	11 meg	100 μF	5	-1.3 -1.41 -11
—	.47 μ	—	—	—	-1.80 ^{1.91} 1.82
—	.22 μ	—	—	—	-1.82 1.94
—	.1 μ	—	—	—	-1.81 1.92
—	50 K	—	—	—	1.81 1.92
—	25 K	—	—	—	1.81 1.92
—	1 meg	—	1000 μF	—	1.81 1.92
—	—	—	10000 μ	—	1.80 1.92

Conclusion



$$\begin{array}{r} 2400 \\ 025 \overline{) 60000} \\ \underline{50} \\ 10 \end{array}$$

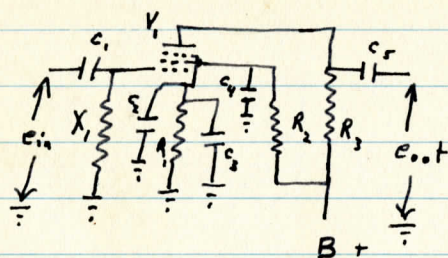
$$\begin{array}{r} 250 \\ 180 \\ \hline 70 \end{array}$$

.010

C_1 C_2 R_1 R_2

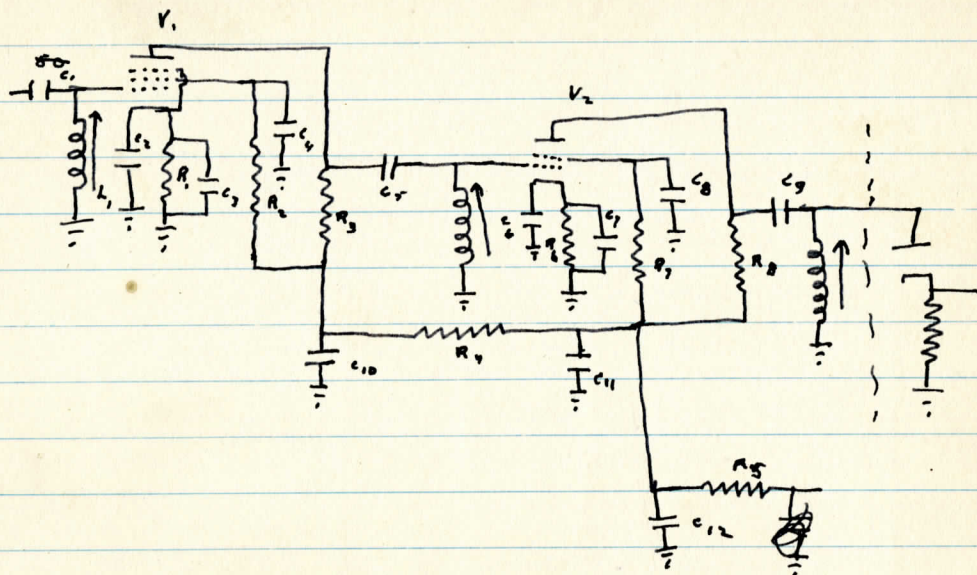
50 μF .01 μ 100 K 11 meg (meter)

$$.01 \overline{) 70.00}$$



$$e_{in} = \text{std } B$$

B+ V_i C₁ X₁ C₂ R₁ C₃ C₄ R₂ R₃ C₅ e_{out}



C_1, C_5, C_9 — 50 pF (surplus 'Feed through')

C_2, C_6 —

C_3, C_7 — 250 pF

C_4, C_8 — 500 pF

C_{10}, C_{11} — 500 pF

C_{12} — 40V 450V

R_1, R_6 — 200 Ω

R_2 — 33,000

R_3, R_8 — 22K

R_7 — 43K

R_4 — 2,5K

R_5 — 1200 Ω

Noise Generator

started 11/2/51

Limited space charge diode

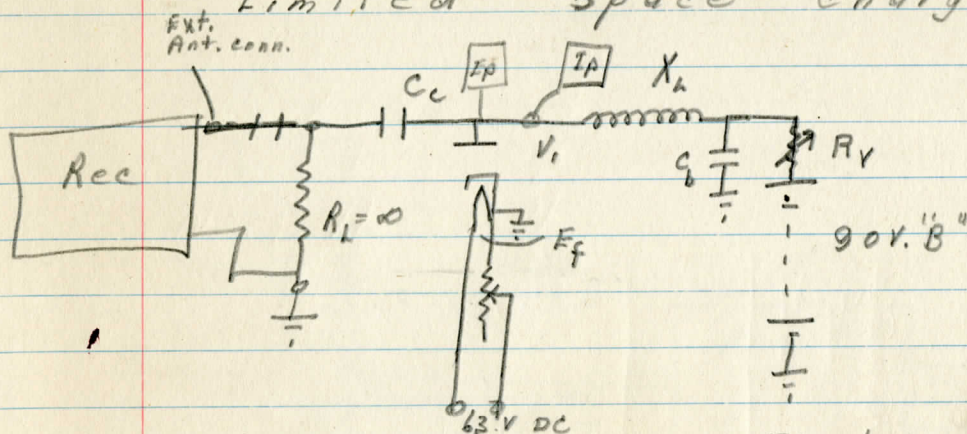


Fig 1

11/2

$$R_1 = 10^4 \Omega$$

$$C_c = .001$$

$$X_h =$$

$$C_c = 330 \mu F$$

$V_1 = 6 F 6$ with G_1 tied to plate

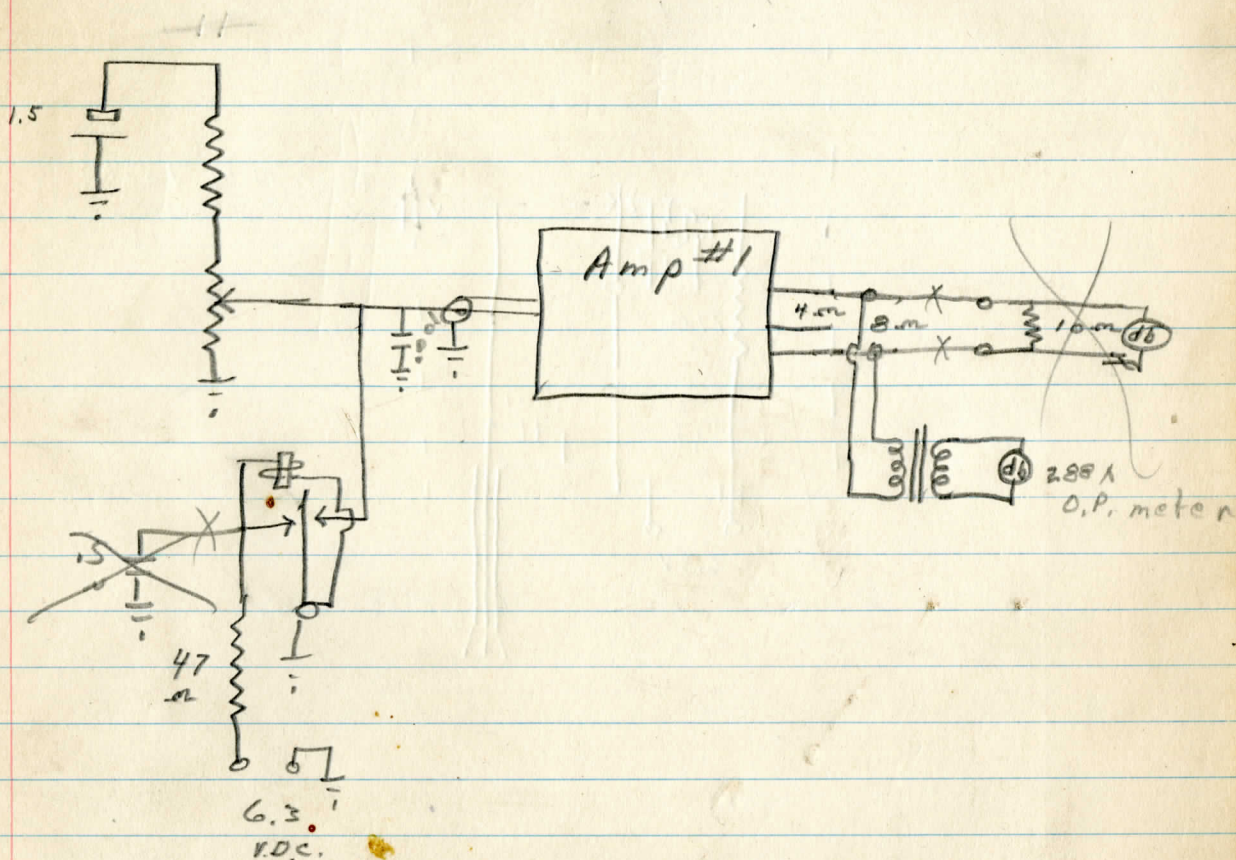
E_f E_p I_p

Using a set up in Fig. 1 there was an appreciable rush in the rec. for various combinations ranging from over 1 amp. at 6.3 V. Fil. X to .0077 ~~amp~~ @ 5 V. Good results were obtained at .008 I_p amp & 5.5 V. E_f - Conclusion - very small out put but otherwise good characteristics. Need method of more exact measurement under controlled conditions.

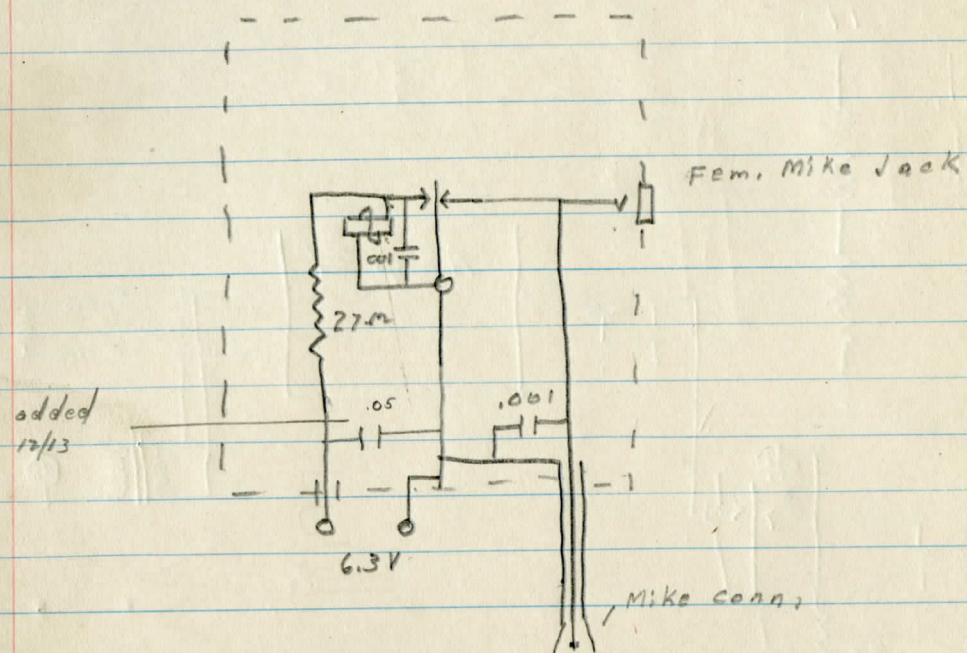
Vacuum Tube Volt meter

12/2/57

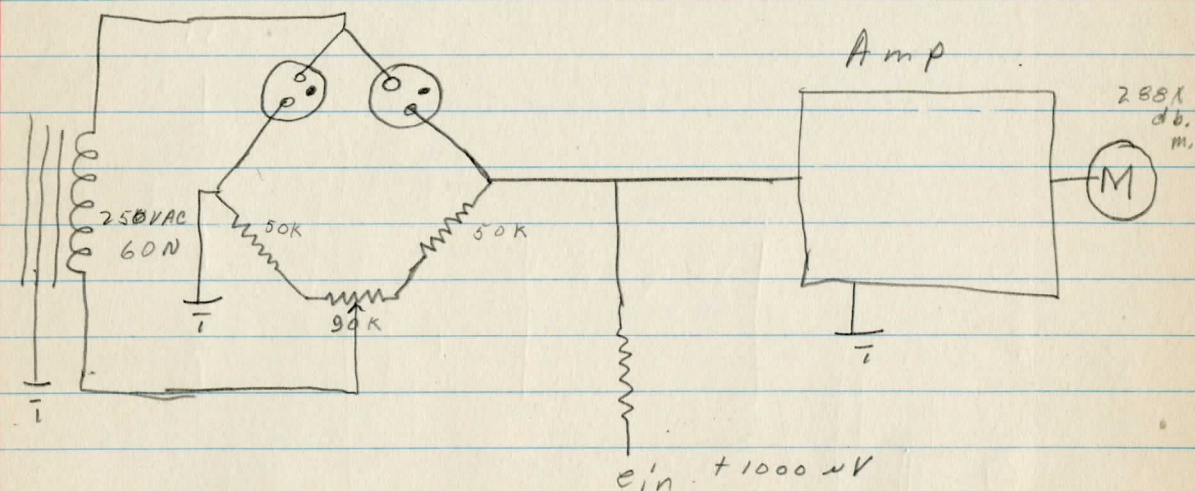
D.C., Chopper & A.F. Amp.



Concl: This arrangement is entirely satisfactory. With good shielding, 100 μ V. sens. should be easily attained. After tests 100 μ V figure can only be obtained from low imp. sources - 1000 μ V appears to be about the best that can be obtained from Hi imp sources as filtering is insufficient in Pwr supply leads in above circuit - 12/13/



12/13/51 Bridge Chopper

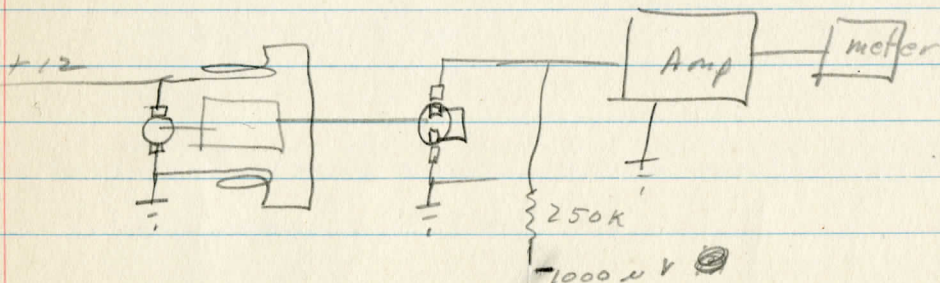


Complete failure - Extremely bad hum (components of 60N) - went through slight minimum as pot was varied

12/13

Motor driven Chopper

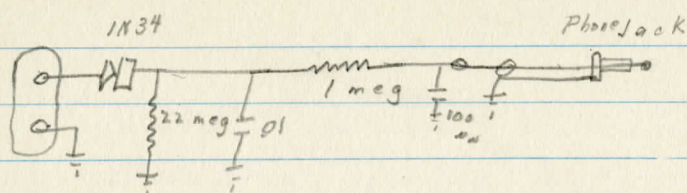
Converted 1800 rpm 28V dynamotor
as follows



Removed winding connections from
H.V. commutator and shorted several
bars on opposite sides together —
complete failure — contact potential
seemed to be cause

12/13

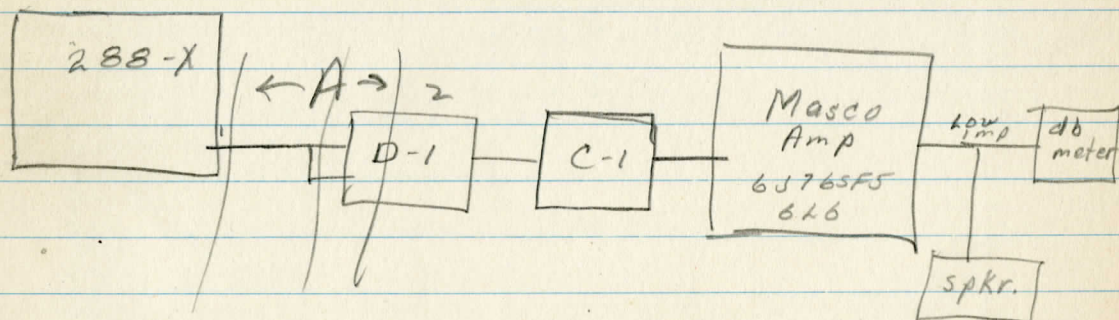
Detector (crystal)



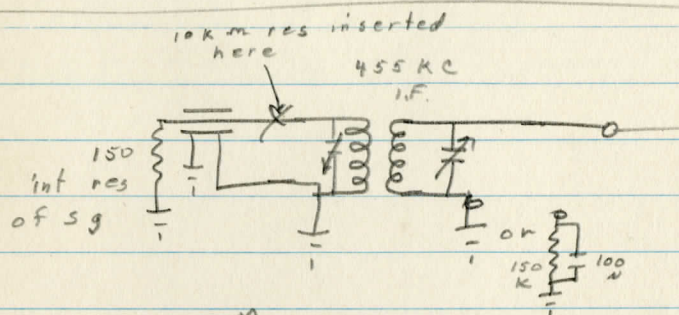
Very satisfactory in preliminary tests - operates
to at least 100 m.c.

12/13

Prelim - tests of D-1 & C-1



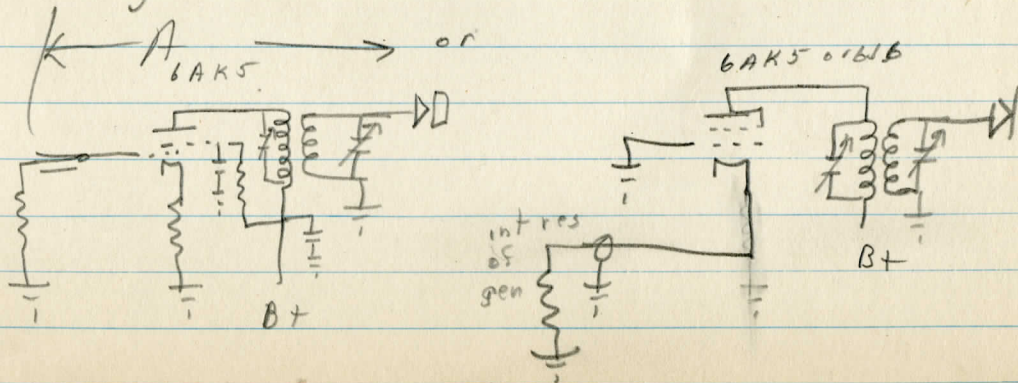
Output of Gen was easily measurable to 100 mc



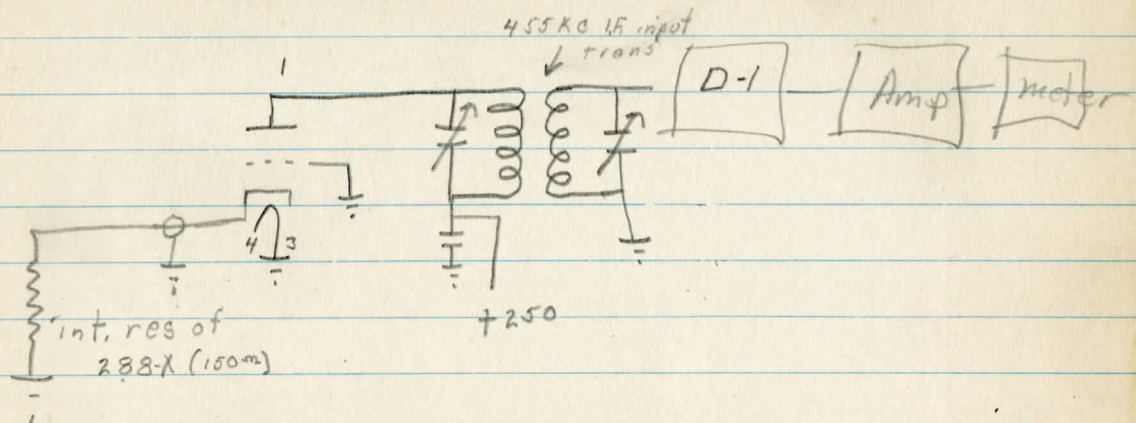
← A →

Above circuit gave no indication when Gen was set to full output & varied through out range. Why? (imp. mismatch?)
impedance mismatch

Try



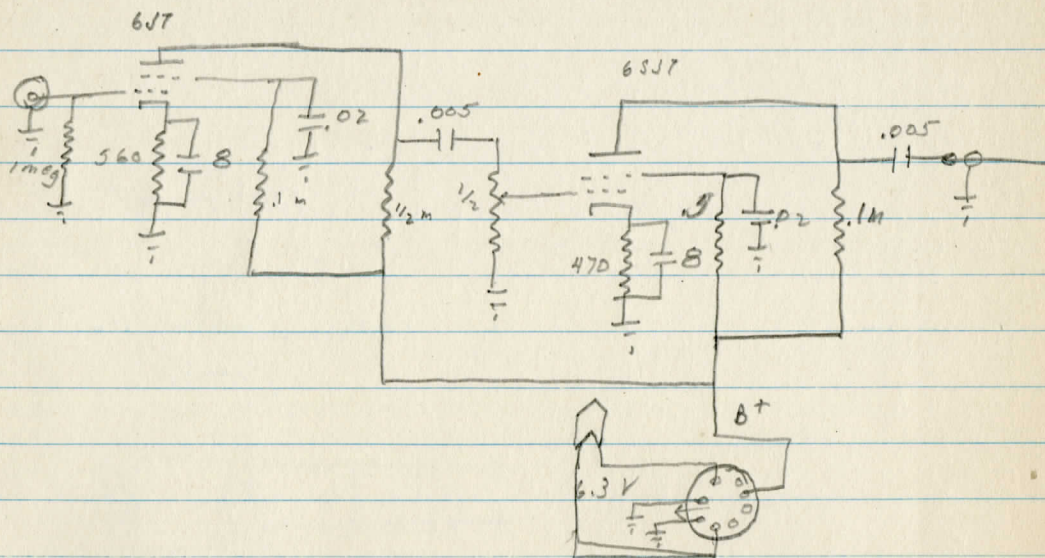
12/14 Imp. Matching Circuit for R.F.



Circuit operates satisfactorily on bread-board test at 455 K.C. using 400 W modulated R.F. Needs further tests. —

12/18/51

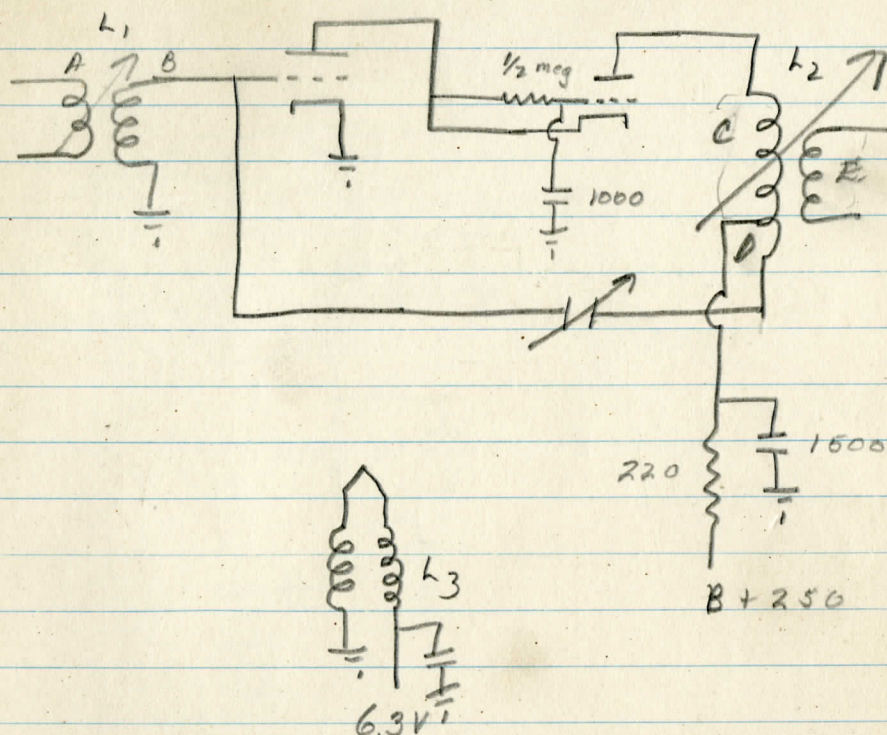
Circuit of Amp #2



12/31/57

Circuit of booster

6BQ7

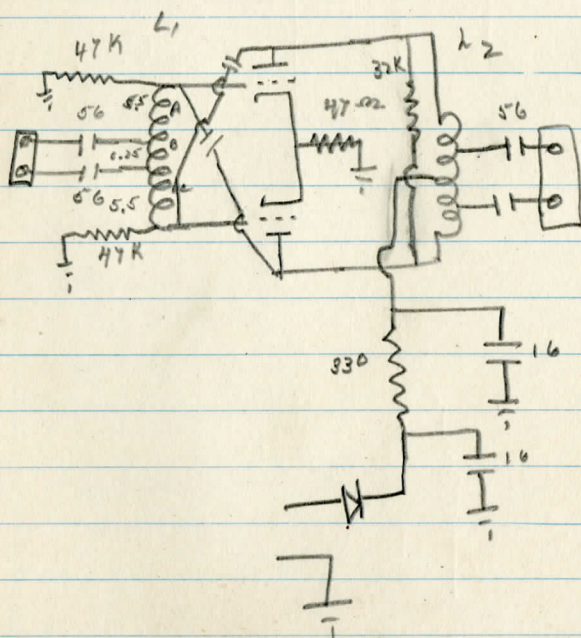


L_1 Single wound #26 on $3/8"$ tunable
form A-4T B-13T C-13T D-2 1/2 T
E-3 1/2 turns

L_3 = 16T #20 (bifilar) on $3/4"$ Poly-sty.
form (single layer)
results - fair - comparable to
commercial 1656 unit - tends toward
instability - tunes very broadly

12/31/51

Circuit of Channel 2 Y-DX

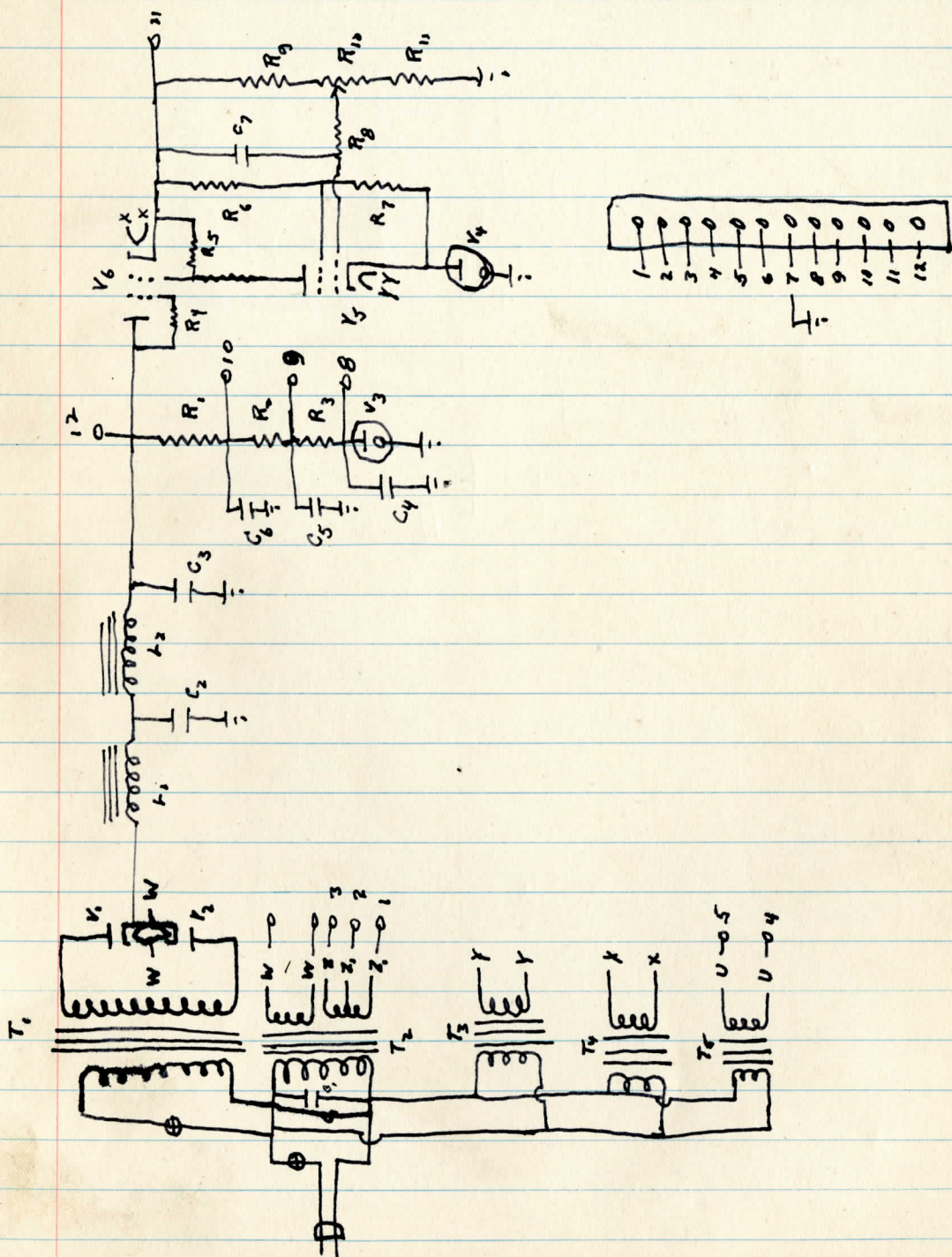


L1 2 layers # 20 ename/ A-5.5 T B-125 C-5.5 T

L2 59 mc as L1

2/15/51

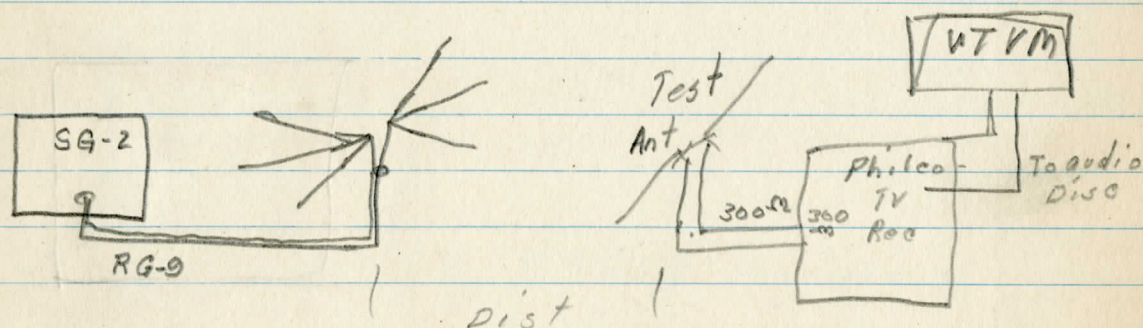
Power Supply #1-A



3/7/52

Gain Tests on Yagis

Test set up

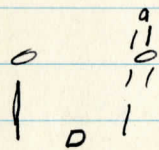


Reading with 300Ω res. across input of line and full output - 1.5 v

Volts	—	Freq	—	Ant	Dist
12		60		C.M. 300Ω	
12		60		8 Element	Vac DX 20'
6		"		"	"
7		"	2-	"	"

Calculation of imp. of lines

Fretline



$$Z_0 = 276 \log \frac{D}{a}$$

$$Z_0 = 276 \log \frac{.96}{.02} = 276 \log 48 = 276 \times 1.681$$

$$D = .96$$

$$a = .020$$

$$Z_0 = 463.9 \Omega \text{ ignoring losses of line + spacers}$$

$$H, \text{ Gain } a = .020 \quad D = .96 \quad Z_0 = 463.9 \Omega \text{ ~~ERROR~~}$$

Matching 2- 300 Ω Yagis to ~~300~~ 300 Ω - 460 Ω - 405 Ω lines

$$\begin{array}{r} 424 \\ 300 \text{ to } 300 \quad \sqrt{180000} \\ 16 \\ 80 \overline{) 200} \\ 2 \overline{) 164} \\ 840 \overline{) 3600} \end{array}$$

$$\begin{array}{r} 525 \Omega \\ 300 \text{ to } 460 \quad \sqrt{138000} \\ 25 \\ 100 \overline{) 260} \\ 204 \\ 1040 \overline{) 5600} \end{array}$$

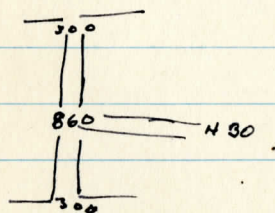
$$\begin{array}{r} 493 \Omega \\ 300 \text{ to } 405 \quad \sqrt{243000} \\ 16 \\ 80 \overline{) 830} \\ 804 \\ 980 \overline{) 2900} \end{array}$$

$$150 \text{ to } 425 \Omega$$

$$\frac{1}{4} @ 252 \Omega$$

$$D = AL \left(\frac{Z_0}{276} + \log a \right) \text{ and } D = AL \left(\frac{Z_0}{276} \right) \times a$$

Try stacking as follows



500 ohm line

$D =$ $\frac{3}{8}$ " tubing - $48 \frac{3}{8}$ " long

$$D = AL \left(\frac{Z_0}{276} \right) \times a \quad a = \frac{3}{16}"$$

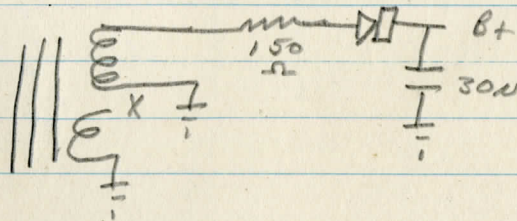
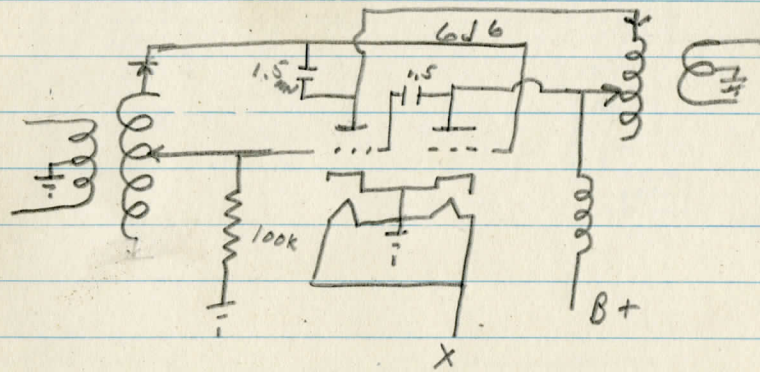
$$= AL \left(\frac{500}{276} \right) \times .1875 = AL (1.811) \times .1875$$

$$= 64.7 \times .1875 =$$

Test on Ants.

	VTVM Reading	Scope Reading
5 Element	3.5 V 3.5 V	6 divs. ✓ @ 45 setting on Vert
V.R.X. to	spurious Response 4 V	" " "
300 Ω line	Bad Mismatch to 300 Ω	

CKT for 'Super Sonic' Amp,

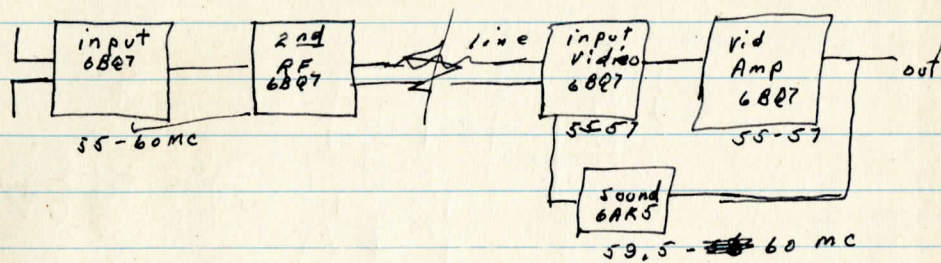


Good results with complete neutralization
Neut. critical

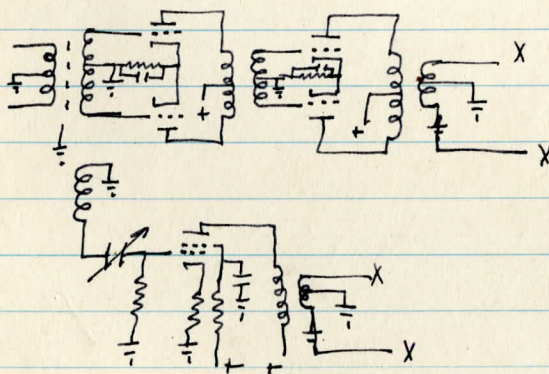
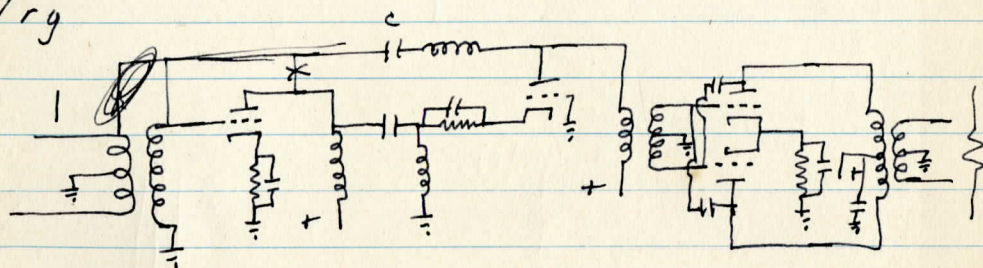
Replaced 6J6 with 6BD7 & bypassed
F1 & B+ with 150pF ceramics-r
Results.

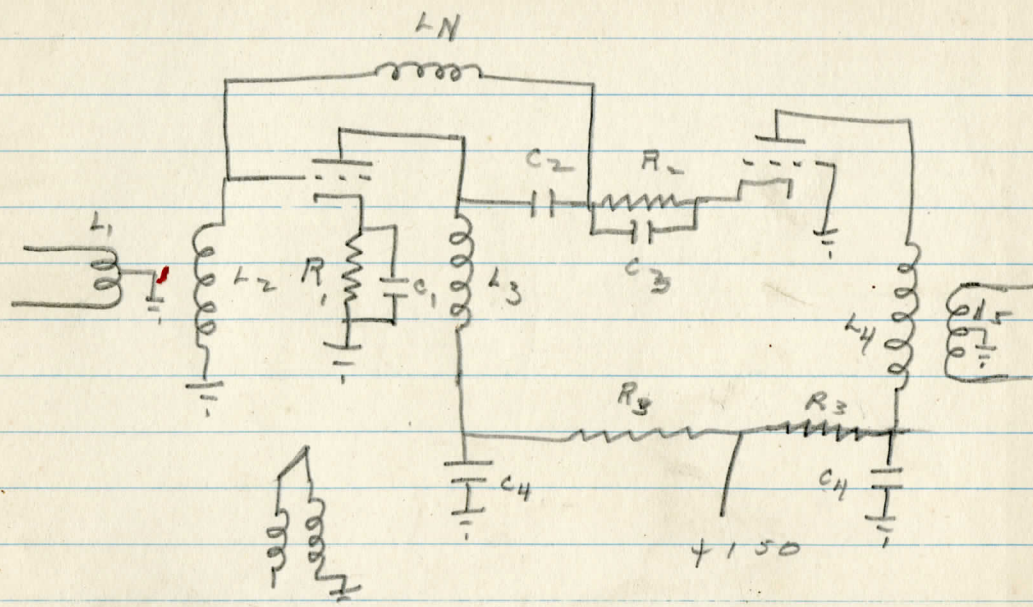
Boosters

Proposed Scheme



Try





R_1 220Ω L_1 4 ct. L_4 20
 R_2 220Ω L_2 12 L_5 5
 R_3 1000Ω L_3 18 L_N 37

C_1 .001 C_3 .001

C_2 220n C_4 1000n

$\begin{array}{r} 3 \\ 8 \overline{) 20} \\ \underline{16} \\ 4 \end{array}$

Specs. of equipment

Amp

Amps, #1 Gain Hi. 108db Lo 70db

D.P. 15W 2% harmonic

" imp. 4-8m Flat 50 to 5×10^3 Hz
circuit in black note book

#2 Gain 80db Hi-imp in & out put