Data Sheet

jensen transformers
By REICHENBACH ENGINEERING

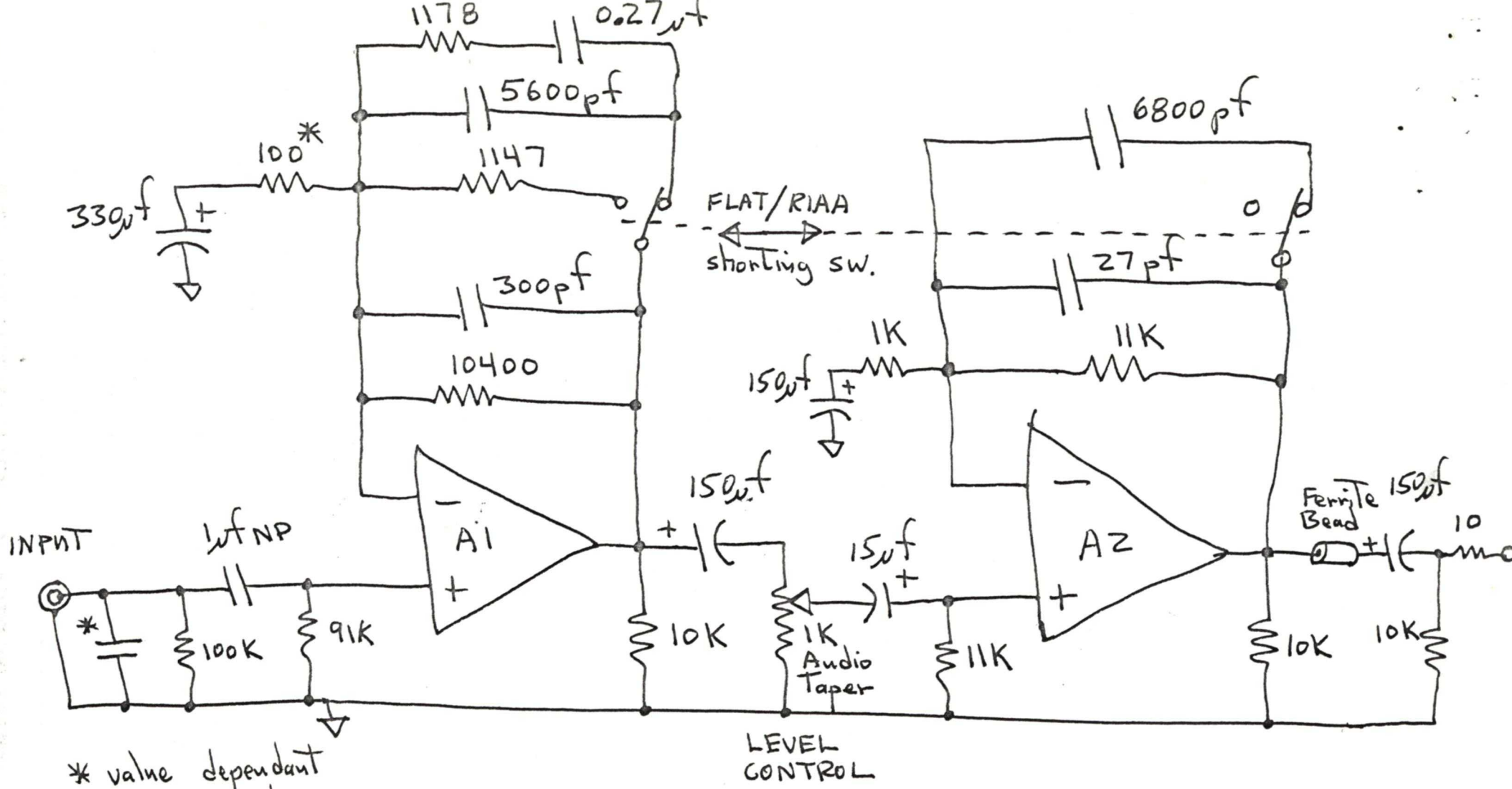
This is an accurate RIAA reproduce amplifier with Two gain stages for high maximum input level capability and low distortion, (< 0.006 % at 20 kHz w/ +20 dB v re. 0.775 v output w/ R_L = 600 ohm

The RIAA/FLAT switch does not change 1 kHz gain. The 3 pole active rumble filter is optional and bypassable. So also the equalization stage for cartridge compensation. The eq section data gives values for Typical curves and frequencies, interpolation will yield frequencies for individual cartridge requirements. Note that both the high freq shelf and mid-freq peaking curves are paired for view-thru horizontal slide rule evaluation to aid in ckt value selection.

Please feel free to call me for farthur info.

Regards
Deane Jensen.

1617 NORTH FULLER AVENUE • HOLLYWOOD, CALIFORNIA 90046 • PHONE (213) 876-0059



* value dependant upon cartridge spec.

* Trim the 100 ohm R to adj. max. gain.

A1 & A2 are 918 Type descrete amps

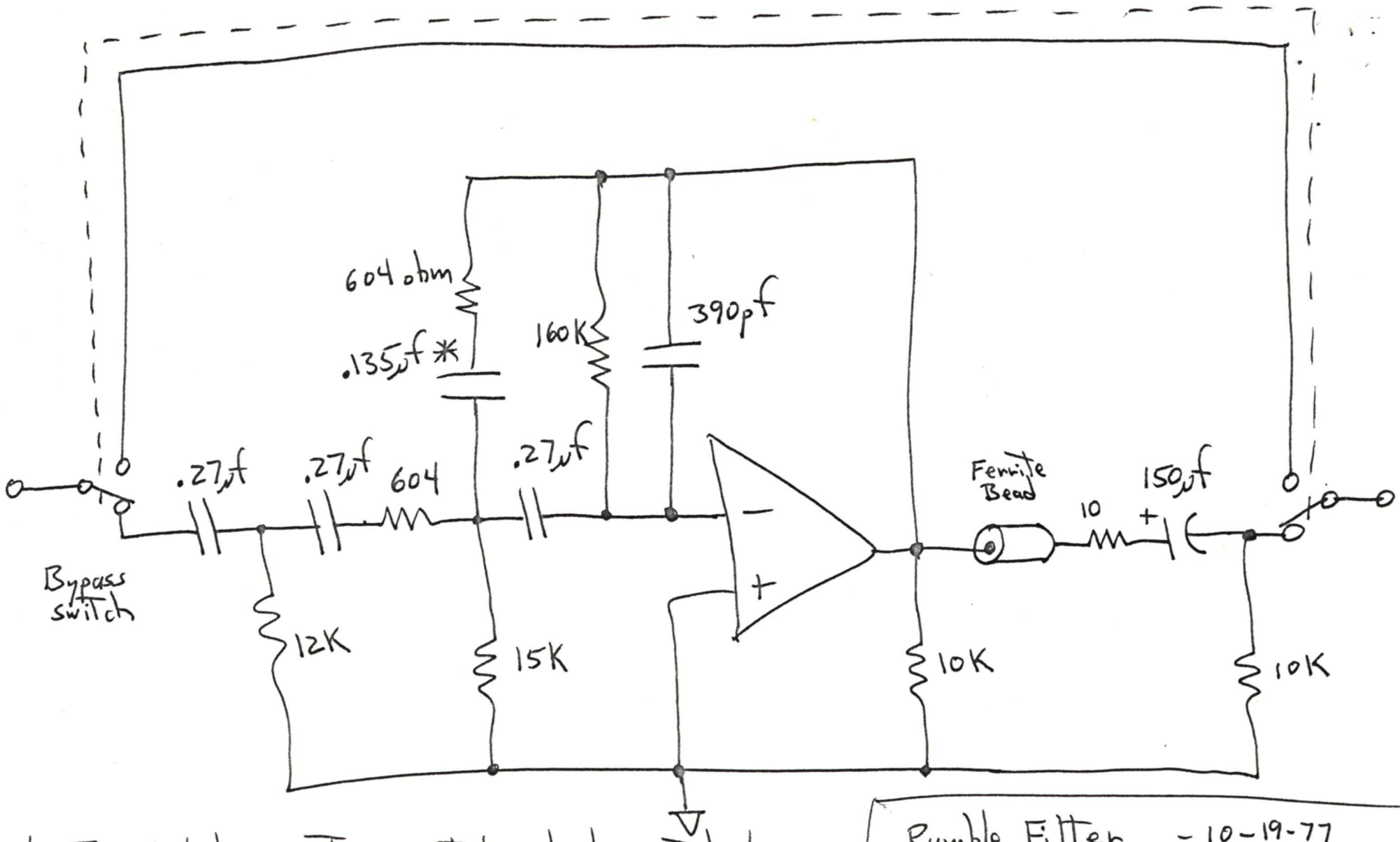
Ferrite Bead is Type FB-2

10 ohm resistor at output should be omitted if output Transformer is used.

1KHz gain is +42.8 dB in both switch positions

2 STAGE RIAA REPRODUCE AMPLIFIER

Revised - 10-19-77



- The two 604 ohm resistors must be closely matched for flat high frequency response, the absolute value is not critical.

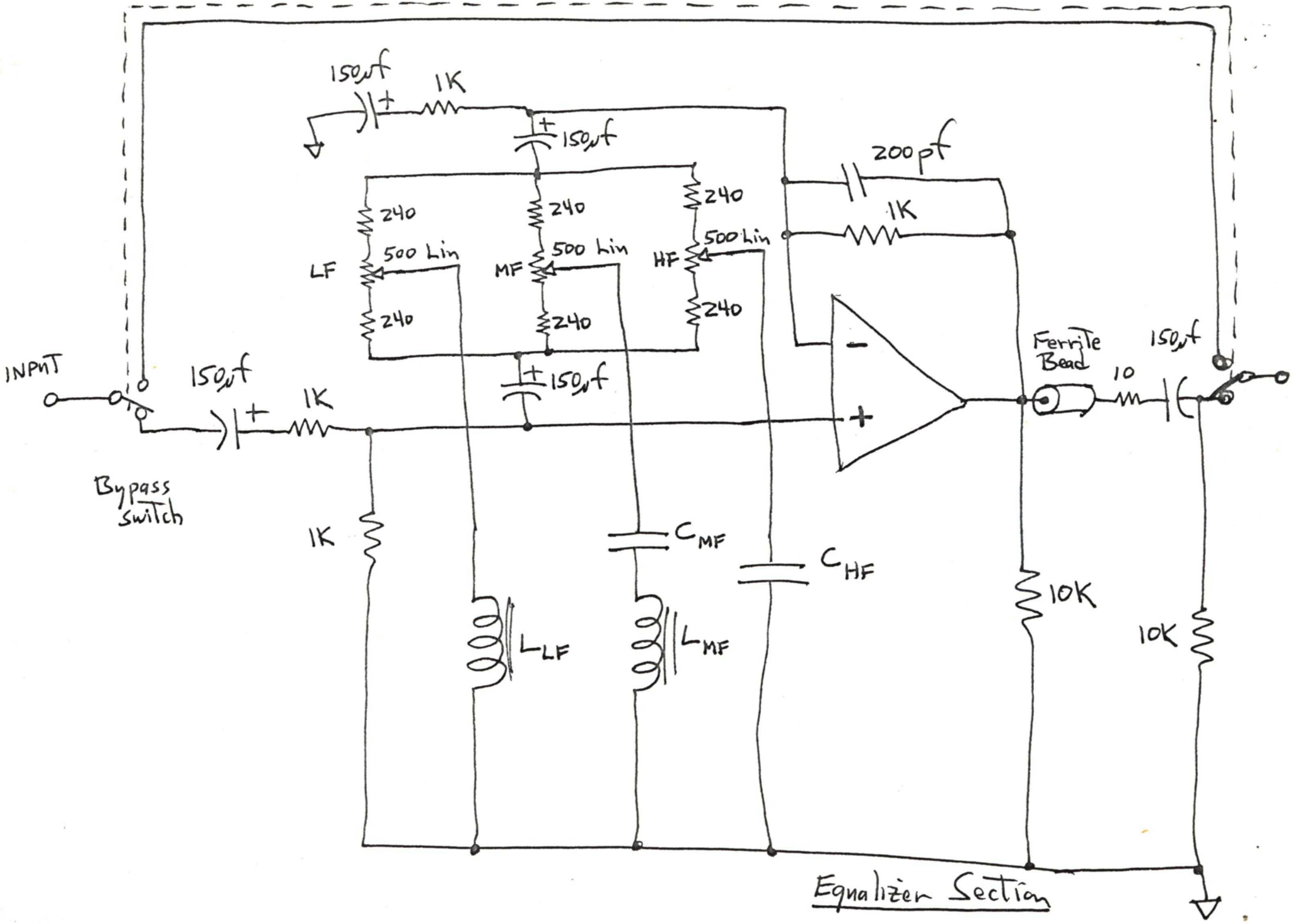
* - Trim the 0.135μf cap. value to adjust passband gain.

Rumble Filter - 10-19-77

Stabilized 3 pole HP Butterworth

-0.5 dB @ 30 Hz

-17 dB @ 10 Hz


150µf
1K
150µf
200pf
240
240
240
500 Lin
500 Lin
500 Lin
LF
MF
HF
240
240
240
1K
150µf
INPUT
150µf
1K
Ferrite Bead
10
150µf
Bypass switch
1K
C_{MF}
C_{HF}
L_{LF}
L_{MF}
10K
10K
Equalizer Section

Phono pre - EQ section

Mid-range peaking eq ckt R's = 1000 ohm

Freq	L	C	
100	563 mH	4.5 µf	MF section # 1
300	188 mH	1.5 µf	
500	101 mH	1 µf.	
700	76.0 mH	0.68 µf	
3 KHz	18.763 mH	0.15 µf	MF section # 2
5 K	10.13 mH	0.1 µf	
7 K	7.60 mH	0.068 µf	
9 K	6.25 mH	0.05 µf	

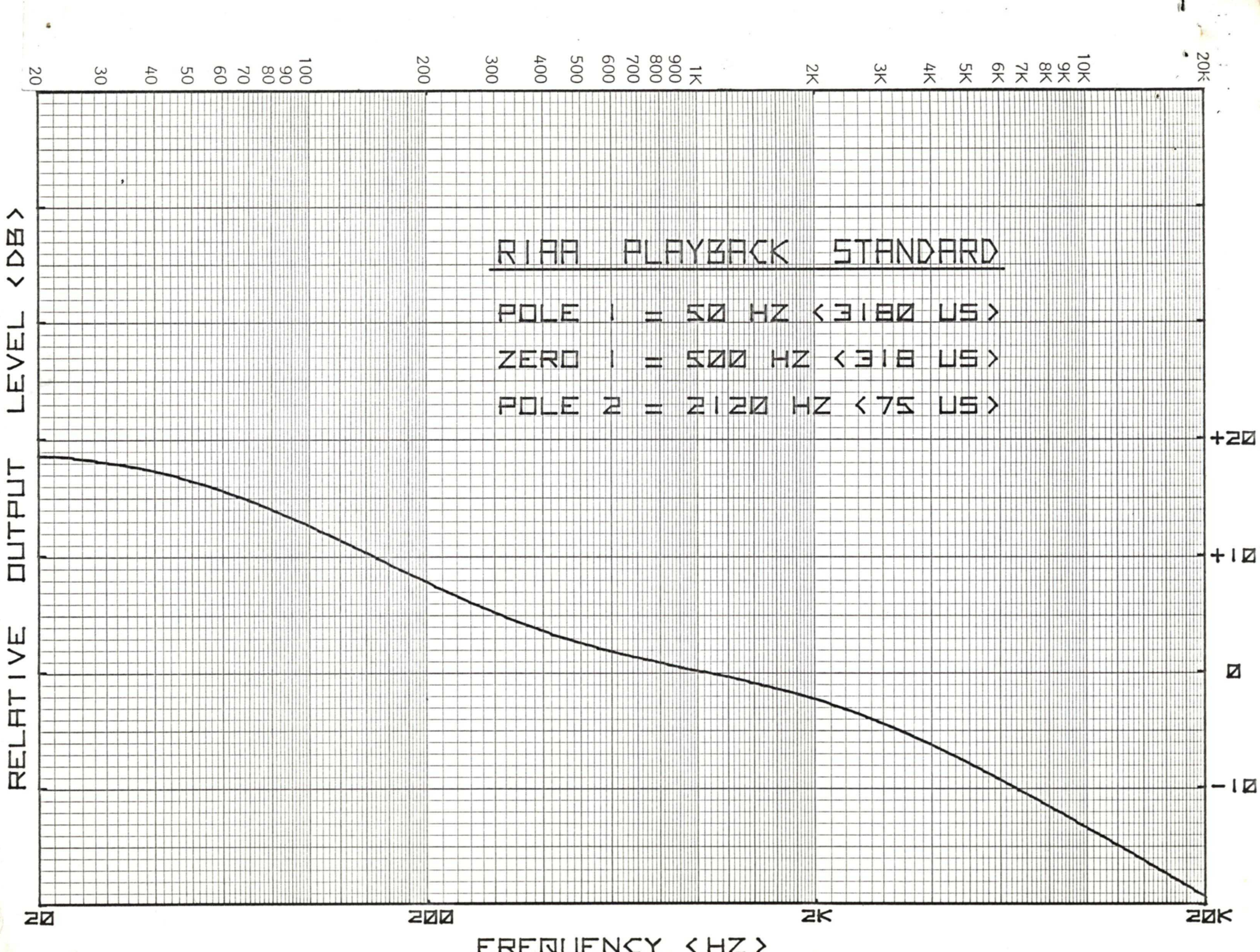
Low frequency section. $f = R/2\pi L$

L		label
800 mH	(99.5 Hz)	100 Hz

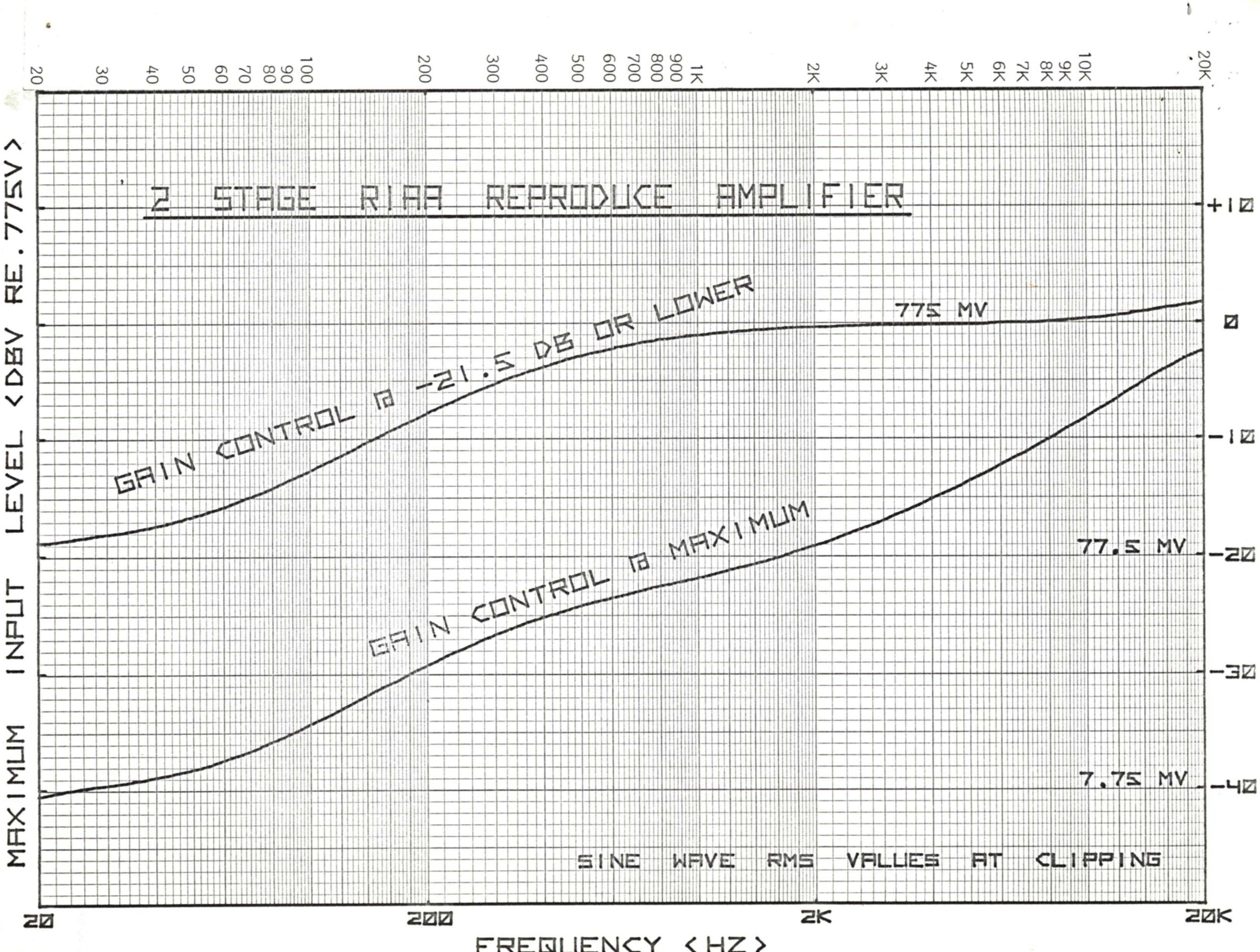
HF section. $f = \frac{1}{2\pi RC}$

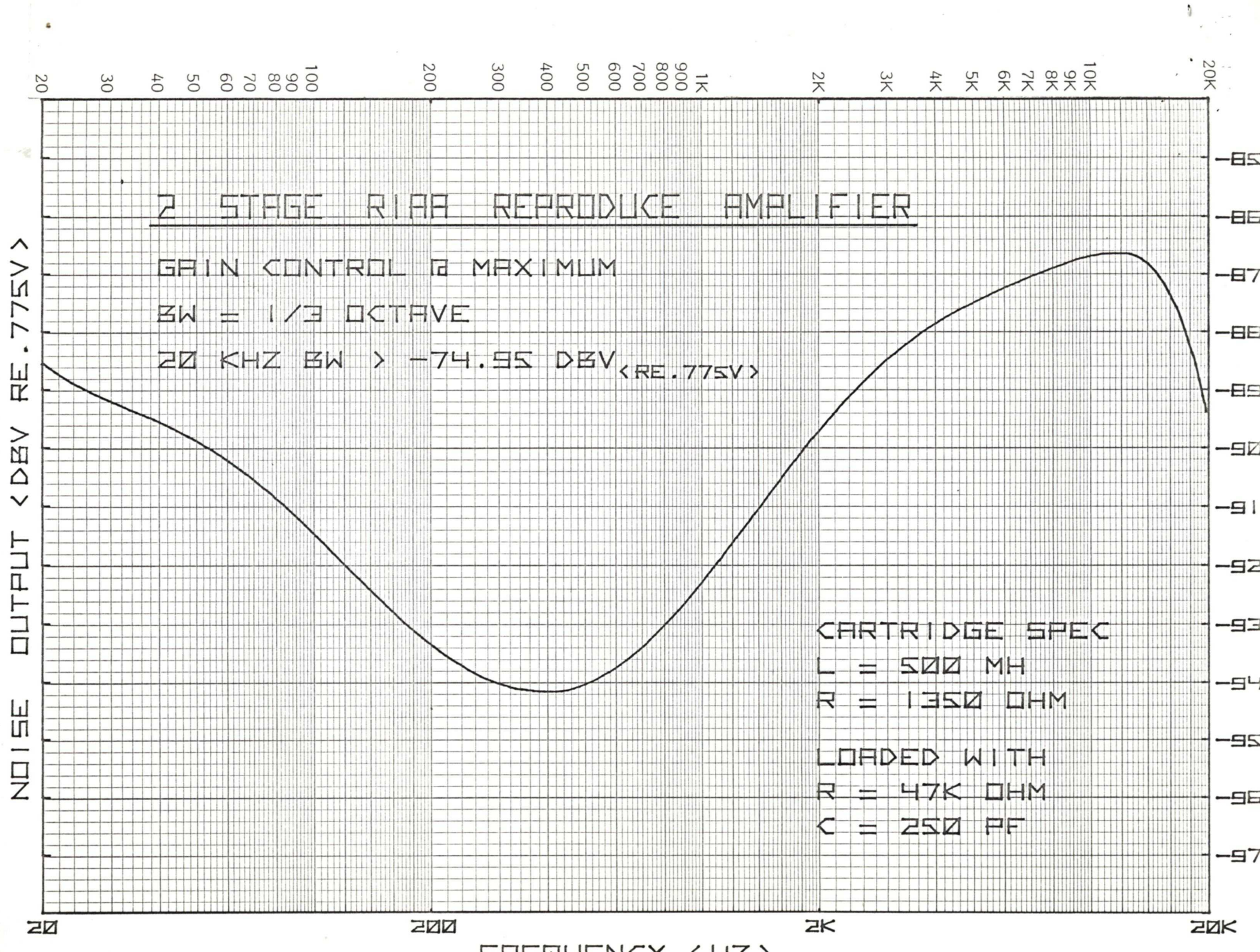
C		
0.1 µf	3180 Hz	3 KHz
0.068	4680 Hz	5 K
0.047	6770 Hz	7 K
0.033	9650 Hz	10 K
0.022 µf	14.5 KHz	15 KHz

Block diagram of phono pre.


RIAA PLAYBACK STANDARD
POLE 1 = 50 HZ (3180 US)
ZERO 1 = 500 HZ (318 US)
POLE 2 = 2120 HZ (75 US)
RELATIVE OUTPUT LEVEL (DB)
+20
+10
0
-10
20
30
40
50
60
70
80
90
100
200
300
400
500
600
700
800
900
1K
2K
3K
4K
5K
6K
7K
8K
9K
10K
20K
20
200
2K
20K
FREQUENCY (HZ)

2 STAGE RIAA REPRODUCE AMPLIFIER
A1 + A2
GAIN CONTROL @ MAXIMUM
A1
A2
VOLTAGE GAIN (DB)
70
60
50
40
30
20
10
200K
100K
90K
80K
70K
60K
50K
40K
30K
20K
10K
9K
8K
7K
6K
5K
4K
3K
2K
1K
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
200K
20K
2K
200
20

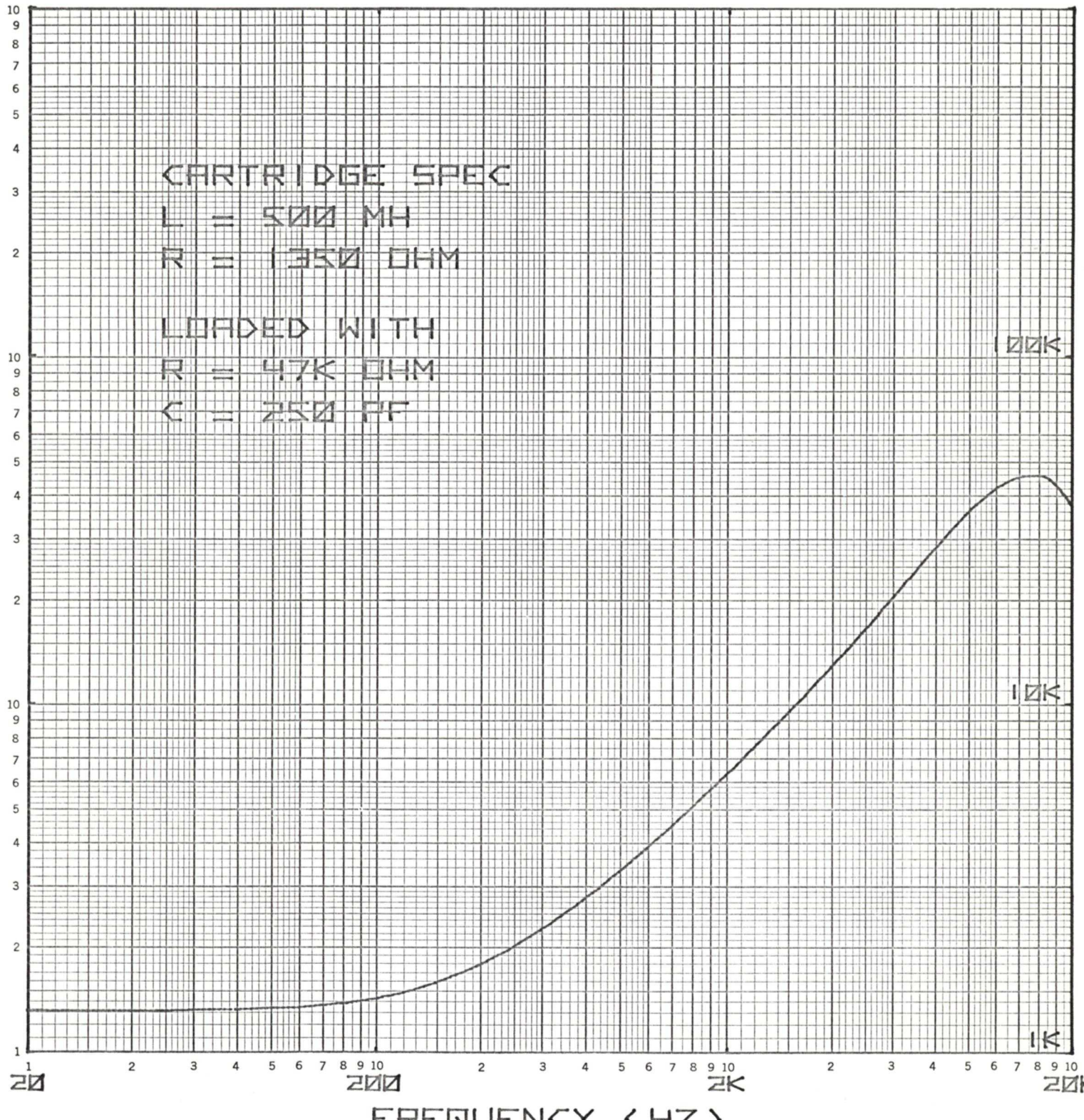

2 STAGE RIAA REPRODUCE AMPLIFIER
GAIN CONTROL @ -21.5 DB OR LOWER
GAIN CONTROL @ MAXIMUM
775 MV
77.5 MV
7.75 MV
SINE WAVE RMS VALUES AT CLIPPING
MAXIMUM INPUT LEVEL <DBV RE. .775V>
FREQUENCY <HZ>
20
30
40
50
60
70
80
90
100
200
300
400
500
600
700
800
900
1K
2K
3K
4K
5K
6K
7K
8K
9K
10K
20K
+10
0
-10
-20
-30
-40
20
200
2K
20K


2 STAGE RIAA REPRODUCE AMPLIFIER
GAIN CONTROL @ MAXIMUM
BW = 1/3 OCTAVE
20 KHZ BW > -74.95 DBV(RE.775V)
CARTRIDGE SPEC
L = 500 MH
R = 1350 OHM
LOADED WITH
R = 47K OHM
C = 250 PF
NOISE OUTPUT (DBV RE.775V)
FREQUENCY (HZ)
20
30
40
50
60
70
80
90
100
200
300
400
500
600
700
800
900
1K
2K
3K
4K
5K
6K
7K
8K
9K
10K
20K
-85
-86
-87
-88
-89
-90
-91
-92
-93
-94
-95
-96
-97

7 6 5 4 3 2 1
20K
10K
9K
8K
7K
6K
5K
4K
3K
2K
1K
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
20K
2K
200
20
FREQUENCY (HZ)
NOISE FIGURE (DB)
2 STAGE RIAA REPRODUKE AMPLIFIER
BW = 1/3 OCTAVE
20 KHZ BW > 11.85 DB NF
CARTRIDGE SPEC
L = 500 MH
R = 1350 OHM
LOADED WITH
R = 47K OHM
C = 250 PF

2 STAGE RIAA REPRODUCE AMPLIFIER

SOURCE IMPEDANCE FOR NOISE MODEL



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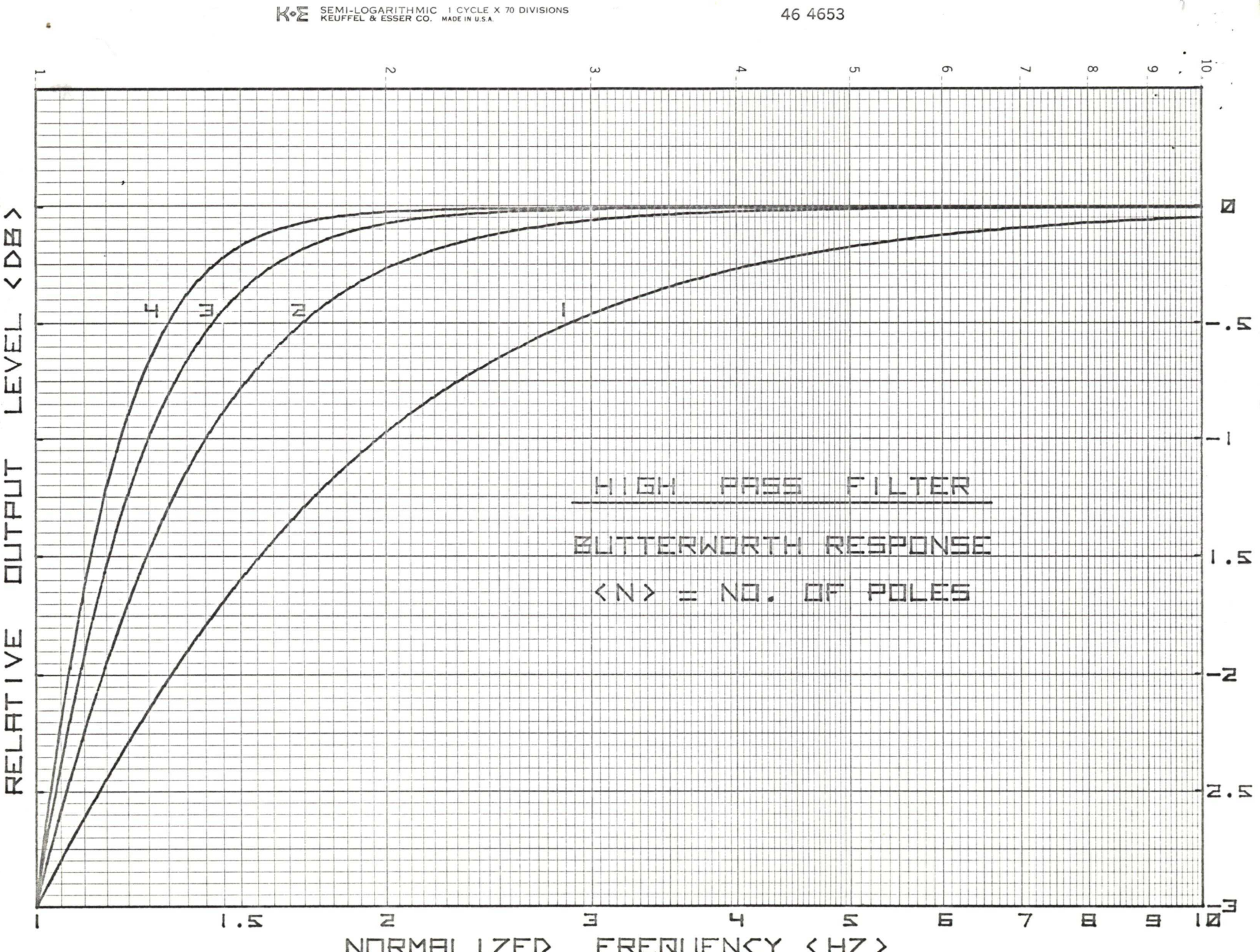
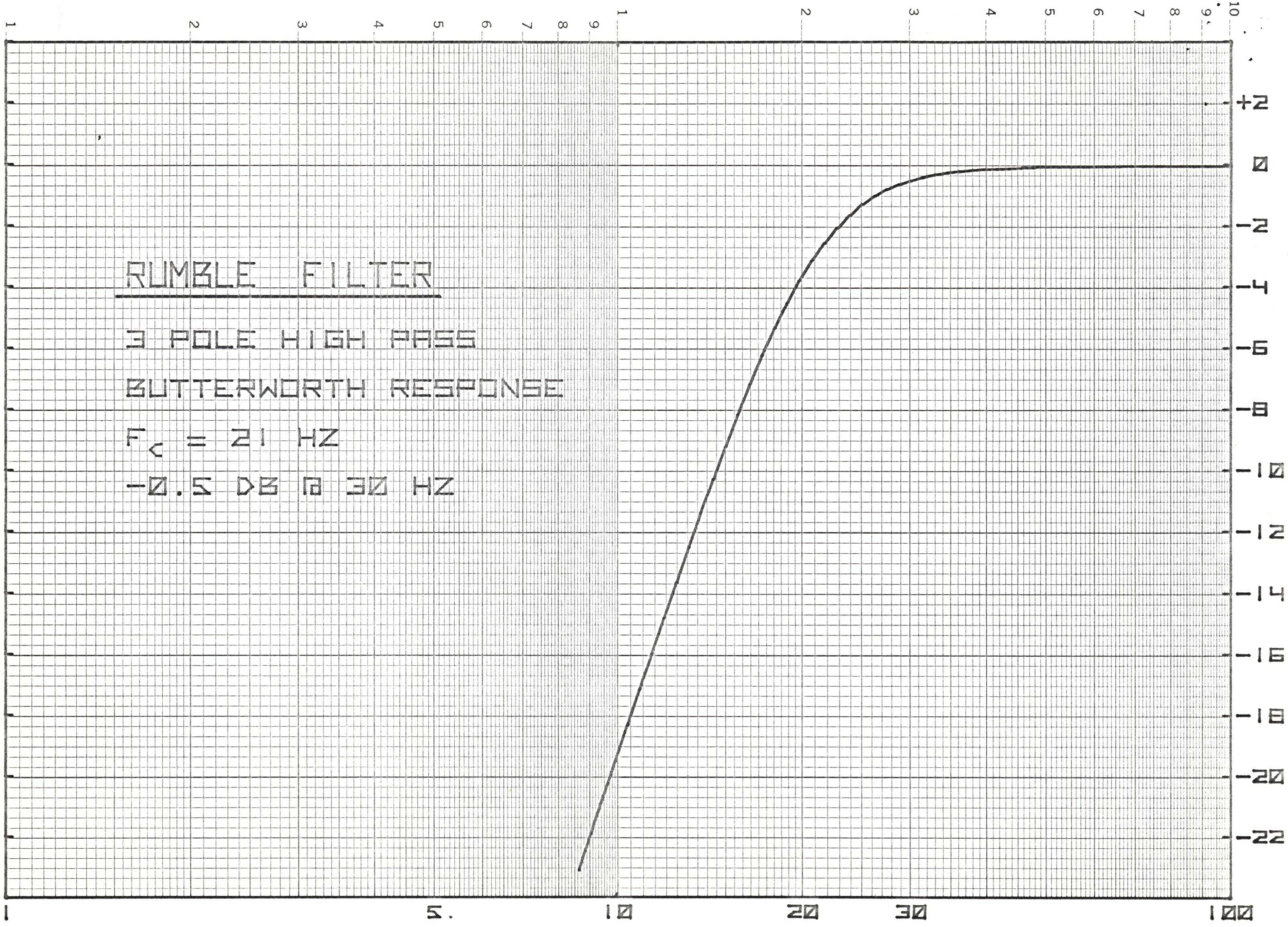
K+E LOGARIT-MIC 3 X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

K+E SEMI-LOGARITHMIC 1 CYCLE X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 4653



K+E SEMI-LOGARITHMIC 2 CYCLES X 84 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 5053



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K&E SEMI-LOGARITHMIC • 3 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

+6
+5
+4
+3
+2
+1
0
-1
-2
-3
-4
-5
-6
20K
10K
9K
8K
7K
6K
5K
4K
3K
2K
1K
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
9K
7K
5K
3K
700
500
300
100
50 OHM STEPS
MATCH THIS CURVE
TO AN OUTER CURVE ON
CLEAR OVERLAY
RELATIVE OUTPUT LEVEL (DB)
FREQUENCY (HZ)
20K
2K
200
20

K+E SEMI-LOGARITHMIC • 3 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 5493