

OPERATING MANUAL

FOR

ESOTERIC SOUND

RE-EQUALIZER



PRICE; \$5.00

INSTRUCTIONS FOR OPERATION OF ESOTERIC SOUND *RE-EQUALIZER*

INTRODUCTION:

Today's modern audiophile equipment can sometimes be frustrating to owners of old records, especially when their collection includes many old 78's or old mono Lp's. All modern preamps are designed solely for today's microgroove, RIAA equalized recordings.

In the 1950's, almost all preamplifiers included selector switches having several different *RECORD COMPENSTIONS*. Occasionally, on the more expensive units, this function was divided among two switches labeled *TURNOVER* and *ROLLOFF*. These terms should be explained: Turnover refers to the bass boost that must be applied in the preamp to compensate for the purposeful diminishment of bass during record cutting to avoid crosscutting of the grooves. Rolloff refers to the treble loss the preamp must provide to compensate for high frequency boost applied during record cutting. The benefit of the latter is a reduction of surface noise during play.



Up until 1954, there were a variety of recording characteristics applied to records as they were being cut, such as AES, LP, NAB and FFRR. Actually, most of these compensations have use only for records of a relatively brief period, say between 1940 and 1954. Before 1940, most records were cut flat with only a low frequency turnover of 6 db per octave below frequencies below from 300 Hz to 800 Hz. This also applied to broadcast recordings(transcriptions) and Vitaphone type recordings used before sound-on-film. Therefore, if you play a pre-WWII 78 rpm record on a modern preamp, you are actually effectively playing it with a scratch filter whose cutoff begins at 2200 Hz. This accounts for the lack of highs and slightly muffled voices experienced with

these records. Of course, after 1954 all records were cut to the RIAA characteristic.

One way of dealing with the equalization problem is to use a graphic equalizer, but it is very difficult to get accurate results by this method. Another way of dealing with the record compensation problem is to modify your modern stereo preamp with an equalization switch for both RIAA and other compensations. This is probably the best way to handle the problem, but it may spoil the cosmetics of your \$1000 preamp.

There is also the problem of what to do with tape recordings made off of modern RIAA compensated phono amplifiers. They will suffer from the frequency response distortion caused by the RIAA amplifier and they cannot be played through the phono input of a special or antique record amplifier.

Because of these problems, the *RE-EQUALIZER* was designed. It is used after the RIAA phono stage, and connects to the system just like a common graphic equalizer. It will then compensate any signal source for proper equalization. The *RE-EQUALIZER* allows the use of any phono amplifier and will not degrade the performance of any audiophile unit.

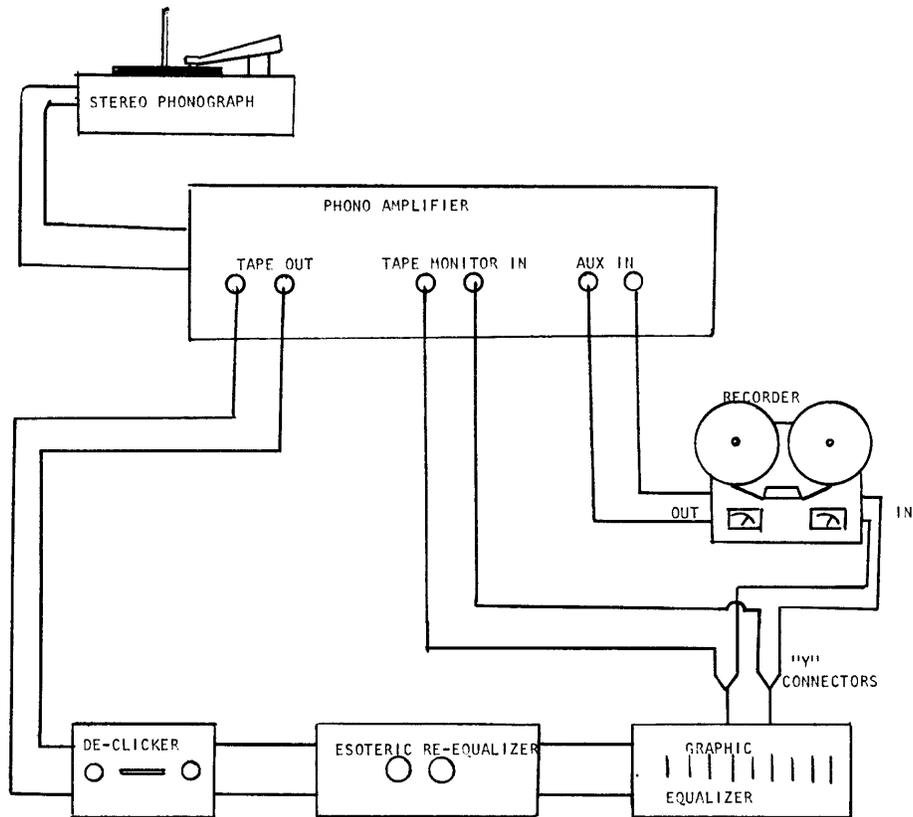


Figure 1

CONNECTION:

The *RE-EQUALIZER* should be connected to the stereo system just like any other auxiliary sound processing component. De-clickers, such as the Packburn 323 or Esoteric Sound *SURFACE NOISE REDUCER* must always precede the *RE-EQUALIZER*. If tape recording is not used, connect the *RE-*

EQUALIZER in the tape monitor path. If tape recording is desired, connect the *RE-EQUALIZER* in the tape monitor path (Fig. 1) and use a "Y" connector to feed its (or associated equipment's) output to an unused "Aux" input. Tape playback will be via this "Aux" input. With the tape monitor switched in, you will hear via your speakers the sound that is being processed.

If your preamp/amp/receiver does not have a separate "Aux" input, eliminate the "Y" connectors and connect directly into the recorder, and connect the recorder's output to the amp's "Tape In." Then for normal listening of Re-Equalized or otherwise processed sound monitor the tape recorder. If the tape recorder has a "Monitor" switch, it must be in "Source" to do this.

CONTROLS:

The front panel has three controls: Turnover, Rolloff, and Bypass. The Turnover has six positions: FLAT, 300 Hz, 400 Hz, RIAA, Lp, and 700 Hz. The Rolloff also has six positions: FLAT, -5 db, -10 db, -12 db, RIAA, NAB. The BYPASS switch provides a hard wire connection from input to output with no intervening circuitry. When switched to "IN," the two inputs are connected together providing mono operation. This reduces some noise and facilitates recording.



Turnover (FLAT) - Use this setting for most acoustical 78 rpm records and all cylinders.

Turnover (300 Hz) - This is used for Columbia brand and manufactured electrical records, London FFRR 78's, BBC broadcast transcriptions, many pre-WWII records & transcriptions, early Western Electric products.

Turnover (400 Hz)(AES) - Some post-WWII 33's, 45's, 78's using the AES characteristic.

Turnover (500 Hz)(RIAA) - Most post-1935 US 78's, broadcast transcriptions and also for Orthoacoustic and NAB transcriptions.

Turnover (500 Hz, modified)(Lp) - For early Columbia and some other Lp's.

Turnover (700 Hz) - A good compromise for 636 Hz and 800 Hz suggested by several sources. Use with some early electrical 78's, some 1931 vintage Victor Lps, early 1950's RCA Lps and EP 45's. Also, it is useful for improving bass on acoustical records, provided there is a sharp rumble filter.

Rolloff (0dB)(FLAT) - For acoustical records and all early (pre-1938) electrical 78's and transcriptions. A low-pass(scratch) filter is useful in conjunction with this setting.

Rolloff (-5 dB) - This is for a -5 db drop at 10 KHz. Use for some post-1938 78's, FFRR 78's and BBC transcriptions or to soften noise on early recordings.

Rolloff (-10 dB) - This is for a -10 db drop at 10 KHz. Use for some post-1938 78's, early Lp's such as London & RCA-Victor.

Rolloff (-12 dB)(AES) - This is used for some post WWII 33's, 45's, and 78's employing the AES characteristic.

Rolloff (-13.7 dB)(RIAA) - For most modern records.

Rolloff (-16 dB)(NAB) - For early Columbia Lp's and all NAB and Orthoacoustic transcriptions.

RECOMMENDED SETTINGS (see tables):

These are recommended, but not written in stone, for setting the *RE-EQUALIZER* to accurately play back various records. As documentation of recording curves is difficult to track down, some experimentation may be called for.

Tables for record compensation settings were published in most early hifi magazines ("Dialing You Discs" in *High Fidelity*) but are often fallacious. These turn up occasionally and may be consulted. In "Conversations With Toscanini," by B. H. Haggin, many subjective suggestions are given for playback of Toscanini discs.

HINTS ON USE:

One advantage of the *RE-EQUALIZER* is the ability to not only use it on phono records, but on tape recordings of vintage records made with RIAA equalized preamps. Be careful not to trust all transcription and record labels. Many pre-WWII radio shows which were recorded with flat highs were re-syndicated

again in the late 40's and 50's. As the original masters were normally used, the re-release will require the flat Rolloff even though the label states NAB or Orthoacoustic! This is also true for post-WW II 78's. Take a RCA-Victor 78 of Glenn Miller, which was originally recorded in the 30's on Bluebird or Victor, and you will find that a Rolloff of FLAT or -5 will suffice. Many of the compensator settings specified in various old tables would have stated that -10, or the AES setting was the proper Rolloff to use. Try playing many Lp reissues of 78's, as on RCA Bluebird, with the Flat Rolloff position and you will be in for a pleasant surprise.

Also, many small recording company and radio station engineers seemingly didn't understand recording and playback curves and often employed no pre-emphasis on recordings labeled as NAB. This has been found to occur commonly, even on discs cut into the 1960's!

You may find many discs that do not fit the tables or discs that do but for whom the table is ambiguous. On these, you will have to let your ear be your guide and also try to determine if the manufacturer could be Western Electric, Columbia, or non-US. These tended to use 300 HZ Turnover. Listening to the material will often suffice to impress you whether to use 300 Hz or 500 Hz. Once the low end is determined try various Rolloffs. Almost all early electrical recordings were recorded with flat response. If noise proves a problem try more than the recommended Rolloff.

When playing older or abused records that require less Rolloff, i.e., Flat, -5, -10, a significant increase in noise level will often be noticed due to surface noise. In these cases, a high frequency, lo-pass, hi-cut, or "scratch" filter is recommended. Don't forget that when playing a flat cut record with an RIAA preamp, you are actually effectively using a scratch filter that is some 13.7 db down at 10 KHz. On these types of records, with let's say a 7.5 KHz scratch filter and the *RE-EQUALIZER* set to FLAT, you will be gaining in highs between 2.2 KHz and 7.5 KHz. Although the scratch filter is employed, its use in combination with the *RE-EQUALIZER* will result in significantly more highs than with a standard RIAA preamp and not using the filter.

When playing vertical-cut records, such as Edison or Pathe, be sure to switch one pair of leads (non-earth ground) of a stereo cartridge used for play. If this is not done, the channels will largely cancel when the *RE-EQUALIZER* is switched to "IN," resulting in very low volume.

SPECIFICATIONS:

Max input signal level:	3.5 volts (+12 dbm)
THD at max output :	0.02%
Frequency Response (RIAA compensation):	20 - 20 KHz \pm .5 db
Gain:	1
Signal-to-Noise relative max out:	85 db

HELP SET THE RECORD STRAIGHT

Please inform Esoteric Sound of any errors that you find in the equalization tables. If you have any additional equalization information, please bring it to our attention so that it can be included in the future updates.

****** WARRANTY ******

This unit is warranted to perform properly for one year from date of purchase. All parts and labor is covered. Should the unit malfunction, return it properly packed, and with payment of \$10.00 to cover return postage, and it will be repaired and returned as soon as possible.

Foreign purchasers are requested to remove the *RE-EQUALIZER* from its cabinet (if purchased) and return the unit along with payment of \$40.00 via surface shipping. We will return the unit via the same process.

PHONOGRAPH RECORD EQUALIZATION COMPENSATION SETTINGS

MANUFACTURER	SPEED	BASS (TURNOVER)	TREBLE (ROLLOFF)
=====			
Acoustic records*	All	FLAT	FLAT
AFRS Transcriptions	33	RIAA	FLAT
AFRS 12" Transcriptions		700	FLAT
1944 Some or if NAB Stated		RIAA	NAB
Allegro	33	Lp	NAB
Allied	33	RIAA	NAB
American Recording Society (<E2KP9607)	33	RIAA	-12
Angel (<35022)#	33	RIAA	-12
Arizona (up till 1955)	33	400	-12
Artist	78	RIAA	NAB
Atlantic	33	RIAA	NAB
Audiophile	33	RIAA	-12
Audiophile	78	400	FLAT
Audio Fidelity (901-903)	33	RIAA	NAB
Bach Guild (501-529)	33	Lp	NAB
Balkan	78	500	-5
Banner (up to 10002)	33	Lp	NAB
Bartok	33	Lp	NAB
Bartok (301-304, 309, 906-920)	33	700	NAB
Berliner*	71.29	FLAT	FLAT
BBC Transcriptions	33	300	FLAT
BBC Transcriptions (1949)	33	500	-5
Bluebird	All	See RCA-Victor	See RCA-Victor
Blue Note	33	400	-12
Boston (up to B202)	33	Lp	NAB
Brunswick (1925)	78	300	FLAT
Brunswick (1946)	78	LP	NAB
Brunswick (up to MG4400)(early "T")	33	LP	NAB
Caedmon	33	700	-12
Caedmon (1001-1022)	33	700	NAB
Canyon (to C6160)	33	400	-12
Capitol(FDS)	78	400	-12
Capitol*	45	RIAA	-12
Capitol(FDS) (up to P8155)	33	400	-12
Capitol(1953,FDS>8156)	All	RIAA	RIAA
Capitol-Telefunken	78	RIAA	FLAT
Capitol-Cetra (up to A-50155)(9/53)#	33	400	-12
Cetra-Soria	33	Lp	NAB

MANUFACTURER	SPEED	BASS (TURNOVER)	TREBLE (ROLLOFF)
Colosseum	33	400	-12
Columbia-1925	78	300	FLAT
Columbia-1938	78	300	-5
Columbia-1948	78	300	NAB
Columbia-1948*	45	RIAA	NAB
Columbia-1948 (up to ML4895, XLP3200)#	33	Lp	NAB
Columbia-1954 (after XLP3200 matrix)#	All	RIAA	RIAA
Columbia with "HIFI+" sticker **	All	RIAA	RIAA
Columbia(English) (1925-53)	78	300	FLAT
1949-1953 (XA561-XAX817-1N,2N only)	33	RIAA	FLAT
Contemporary	33	400	-12
Concert Hall	78	RIAA	-5
Concert Hall (XTV matrix to 20386)	33	Lp	NAB
Concert Hall (E0 matrix)	33	700	-10
Concert Hall (E1KP/E2KP matrix)	33	400	-12
Concert Hall (CH matrix?)	33	RIAA	-10
Concert Hall (E2RP>4095/E2KP>9607)	33	RIAA	RIAA
Contemporary (3501, 2501/2/5/7, 2001/2	33	400	-12
(2504)	33	RIAA	NAB
(after AP121)	33	RIAA	RIAA
Cook	33	RIAA	-12
Cook(binaural-inside band)	33	RIAA	FLAT
Coral (up to MG4400)(w/raised matrix)	33	700	-5
Coral	78	400	-12
Cylinder records*	All	FLAT	FLAT
Decca (US)(pre 1946)	78	300	FLAT
Decca (1946)	78	RIAA	NAB
Decca*	45	RIAA	-5
Decca (up to MG4400)(w/raised matrix)	33	700	-5/-10
Decca-English	78	300	FLAT
Decca-FFRR (1944)	78	300	-5
Decca-FFRR (after 6/50)	33	RIAA	FLAT
(>ARL1173)#	33	Lp	-10
(>ARL2530)#	33	RIAA	RIAA
DGG (Deutsche Grammophone)	33	Lp	-10
	78	300	-5
Dial	33	Lp	NAB
Dial*	45	Lp	NAB
Dial	78	Lp	NAB
Edison	80	FLAT	FLAT
Electra (2-15, 18-20, 24-26)	33	700	NAB
(17, 22)	33	400	-12
(16, 21, 23, 24)	33	RIAA	RIAA
Electrical 78's (general) (1925-1938)	78	300	FLAT
1932-1938	78	300/RIAA	FLAT
1938-1946	78	300/RIAA	FLAT, -5
1947-1954	78	300/RIAA	NAB
Electrola	78	700	-10

MANUFACTURER	SPEED	BASS (TURNOVER)	TREBLE (ROLLOFF)
EMI (1931-53)	78	300	FLAT
1949-1953	33	RIAA	FLAT
7/17/53	33	RIAA	RIAA
EMS	33	400	-12
Epic	33	Lp	NAB
Esoteric (ES500, 517, EST5, 6)	33	400	-12
(E2KP to 9607)		RIAA	-12
European 78's (general)	78	300	-5
Festival	33	Lp	NAB
Folkways	33	Lp	NAB
Fraternity Records (up to F-1013)	33	RIAA	FLAT
Good Time Jazz (3, 9-19)	33	400	-12
(1, 5-8)	33	RIAA	-16
Gramophone	78	300	-10
Handel Society	33	Lp	NAB
Haydn Society (<XTV20386, HS3062, HS80)#	33	Lp	NAB
Hit Of The Week	78	RIAA	-5
Home recordings	33/78	RIAA	-5
HMV(English)			
1925-1953	78	300	FLAT
1949-1953 (2XEA213-392 -1N,2N only)	33	RIAA	FLAT
HMV(American-1951)	33	RIAA	-12
Improved Record (Eldridge R. Johnson)*	71.29	FLAT	FLAT
Kapp (up to 1001)	33	700	NAB
Kendall	33	RIAA	NAB
Keynote	78	RIAA	FLAT
King	78	RIAA	NAB
Linguaphone	78	300	FLAT
L'Oiseau-Lyre (up to OL50018)#	33	Lp	-10
London (pre 1945)	78	300	FLAT
London-FFRR (after 1944)	78	300	-5
London-FFRR (after 6/1950)	33	RIAA	FLAT
(>ARL1173)#	33	RIAA	-10
(>ARL2530)#	33	RIAA	RIAA
Lyricord (before 1953)(E0-E3 matrix)	33	400	-12
(XTV matrix)	33	Lp	NAB
(If 629 listed on jacket)	33	700	NAB
Majestic	78	RIAA	NAB
Mercury (MG10000 series-approx fit)	33	500	-10
Mercury (thru 10/54, <MG50026, 7000)#	33	400	-12

MANUFACTURER	SPEED	BASS (TURNOVER)	TREBLE (ROLLOFF)
Mercury*	45	400	-12
Mercury	78	400	-12
MGM (up to E3071)#	33	RIAA	-12
MGM*	45	RIAA	-12
MGM	78	RIAA	-12
Montilla	33	RIAA	-12
Musicraft	78	700	RIAA
NAB/NARTB transcriptions	33/78	RIAA	NAB
NAB/NARTB vertical transcriptions	33/78	400	NAB
New Records	33	Lp	NAB
Nocturne (LP 1-3, 5, XP 1-10)	33	400	-12
Oceanic (up to XTV20386)	33	Lp	NAB
Odeon	33	300	-10
Odeon(some early electrical)	78	700	FLAT
Odeon(pre-1947)	78	300	FLAT
Okeh(electrical)	78	300	FLAT
Orthoacoustic transcriptions	33/78	RIAA	NAB
Overtone (1-3) (up to XTV20386)	33	Lp	NAB
Oxford	33	Lp	NAB
Pacific Jazz (1-13)	33	400	-12
Parlophone			
1947-1954	33	300	-10
pre-1947	78	300	FLAT
1947-1954	78	300	-10
Period (up to 576)#	33	RIAA	NAB
Philharmonia	33	400	-12
Polydor	33	300	-10
Polydor	78	300	-10
Polymusic	33	RIAA	NAB
Polymusic(binaural-inside band)	33	RIAA	FLAT
Rachmaninoff Society	33	Lp	NAB
RCA-Victor			
Early Acoustics*	71.29	FLAT	FLAT
Later Acoustics*	76.59-78	FLAT	FLAT
1925	78	300	FLAT
1931(Program Transcription)	33	700	FLAT
1935	78	300/RIAA	-5
1938-1954	78	RIAA	-5
1954 (New Ortho only)	78	RIAA	RIAA
1930-50 (European)	78	300	FLAT
1949 (D9 to EOLRC3980)#	33/45	700	-10
1950-8/52 (>EOLRC3981)#	33/45	RIAA	-12
8/52(New Orthophonic)(>E2RP4094)	33/45	RIAA	RIAA
Remington (up to 199-135)#	33	RIAA	NAB

MANUFACTURER	SPEED	BASS (TURNOVER)	TREBLE (ROLLOFF)
Riverside	33	400	-12
Renaissance	33	Lp	-12
Stradivari	33	Lp	NAB
Supraphone	78	400	FLAT
Technicord	78	700	-12
Telefunken	78	400	-5
Tempo	33	RIAA	NAB
Transcriptions(many pre-WWII)	33/78	RIAA	FLAT
Transcriptions(vertical-old)	33	300	-5
Transcriptions(vertical-NAB)	33	400	NAB
Transradio	33	Lp	NAB
Ultraphone	33/78	400	FLAT
Urania-old (up to XTV20386)	33	RIAA	NAB
Urania-later (<E2KP9607)	33	400	-12
Urania-late 1954 (>E2KP9607)	33	RIAA	RIAA
Vanguard (411-422, 6000-6018, 7001-7011, 8000-8004, (up to XTV20386)	33	Lp	NAB
Vox (up to XTV20386), PL8400)#	33	RIAA	NAB
War Department-Special Services - 12"	33	700	-5
Westminster (EO matrix)	33	700	10
Westminster (up to E2KP9607)	33	400	-12
Westminster (up to XTV20386)	33	Lp	NAB
Victor	All	See RCA-Victor	See RCA-Victor
Vitaphone(motion picture)	33	300	FLAT
Vocalion(electrical)	78	300	FLAT
Western Electric(early transcriptions)	33	300	FLAT
Zonophone	78	300	FLAT
Zonophone (early)	71.29	FLAT	FLAT
RIAA, Ortho, New Ortho, New NARTB, New AES used on recordings since 1955	All	RIAA	RIAA

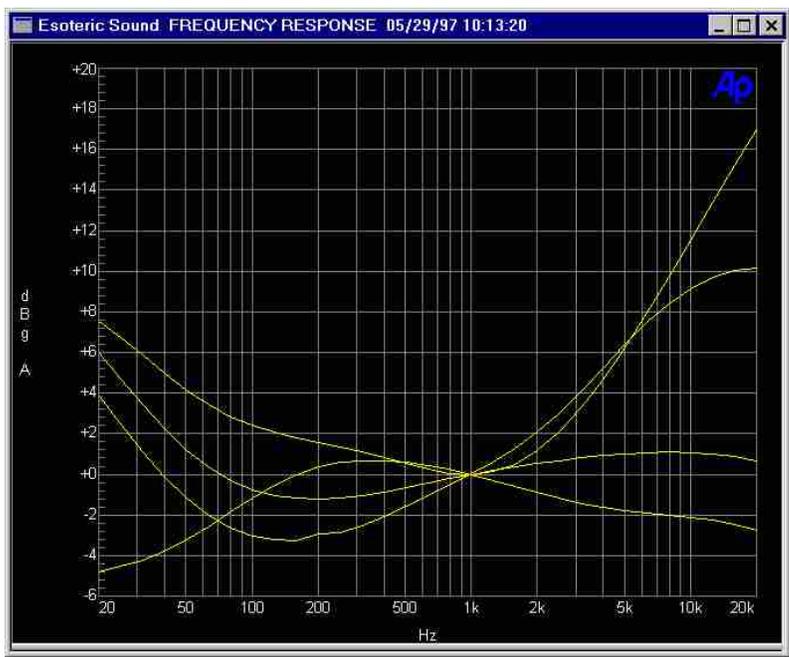
Notes:

- * On some recordings with very thin bass, such as 45 rpm EP's and acoustics, 700 Hz Turnover may be used with appropriate rumble filter.
- ** Sometimes, one side has old matrix number, the other new. There are two Eqs.
- # These are approximate record numbers circa adoption of RIAA

Sources:

McIntosh Laboratory, C-8, C-22 Manuals.
 High Fidelity Magazine, Dialing Yor Discs, 1953-57.
 Fisher Master Audio Control 80-C operating manual.
 Pickering Record Compensator manual.
 Packburn 323A operating manual.
 Source Engineering Specialist Preamplifier operating manual.

Western Electric 9A reproducer manual.
 RCA Universal Tone Arm And Filter Kit MI-11870 manual.
 Radiotron Designer's Handbook.
 The Recording and Reproduction of Sound, Oliver Read, 1952.
 Radio & Television News, Charles Boegli, 1953.
 Getting the Best from Records, Wireless World, February, 1940, P. G. A. H. Voigt.
 Preamplifier Switching and Equalizing Unit for Critical Listening, M. V. Kiebert, Audio, 1952.
 Evolution of a Recording Curve, R. C. Moyer, Audio, 1953.
 Professional Equalizing-Preamp Suitable for Home Use, K. W. Betsh, Audio, 1957.
 Letter from E.C. Forman to John M. Kaar, 1935.
 Drawing KRD-1384, from letter of H. I. Reiskind of RCA to John M. Kaar, 12-10-49.
 Personal correspondence from Emery Cook, 1987.
 Letter from V. C. Houk of RCA to John M. Kaar, 10-26-48.
 Letter from H. I. Reiskind of RCA to John M. Kaar, 4/11/50.
 Personal correspondence and articles from Peter Copeland, 2002.



FREQUENCY RESPONSE OF *RE-EQUALIZER* FOR VARIOUS SETTINGS OF TURNOVER AND ROLLOFF

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