# OPERATING MANUAL

# FOR

# REK-O-KUT

# *DE-HISSER*


**PRICE: $5.00**

**INTRODUCTION:**

The *Rek-O-Kut De-Hisser* is designed to remove annoying hiss and noise from both old and new phonograph records as well as tape recordings of many formats. It incorporates an input switch which can select either the left or right wall of a mono groove, and also a low-cut, or rumble filter.

Hiss removal is accomplished not by a commonly used, variable hi-cut circuit, but by filtering individual octaves within the high frequency spectrum of the program material. This results in almost no audible pumping of hiss with program material and excellent performance even with spoken word.

The input selector switch features a unique, low-frequency crosstalk circuit, which helps to cancel out rumble and similar noise. More common switching circuits (left only or right only) permit low frequency noises (rumble) to be heard unimpeded. Our added circuitry cancels out most rumble without affecting bass response.

The LO-CUT switch is selectable in degree of low-frequency noise attenuation. The 40 Hz position will suffice for many noise plagued LP records and 78s, while the 80 Hz position may prove useful with old acoustic records, records requiring severe turnover settings, and hum.

## CONNECTION:

The *Rek-O-Kut De-Hisser* should be connected to the stereo system just like any other auxiliary sound processing component. De-clickers such as the *Esoteric Sound Surface Noise Reducer*, Packburn 323*, Rek-O-Kut Decrackler*, SAE 5000, or Burwen TNE 7000 must always precede the *De-Hisser*. A stereo phono cartridge should be used with the *De-Hisser* even if the disc played is actually mono. If the *Rek-O-Kut Re-Equalizer* is used, it must be connected after the *De-Hisser*.

There are many ways you can connect a *De-Hisser* to a stereo system. One of the easiest ways to connect it and other sound processing devices is to use our SuperConnector. The following descriptions are just a few of many recommendations that could be made.

NO AUDIO RECORDER USED

If tape recording is not used, connect the *De-Hisser* into the tape monitor path of your audio amplifier or receiver. To listen to the processed sound, operate the tape monitor switch to IN, or MON. You will hear the processed sound through your speakers. Be sure to have the mode switch of the *De-Hisser* switched to IN. If necessary, you may daisy-chain devices as in Figure 1.

AUDIO RECORDER IS USED (version 1)

If an audio recorder is used, such as a Cassette recorder, open reel recorder, or CD recorder, use the following connections. Connect the *De-Hisser* into the tape monitor loop (Figure 1) and use a "Y" connector at the output of the *De-Hisser*. Feed one leg of the “Y” connector to the MON IN or TAPE IN input that is associated with the tape monitor loop.

Connect the other feed of the “Y” connector to the record input of the recording device. Connect the recording device’s output to an unused AUX input on your amplifier. With the tape monitor switched in, you will hear the sound that is being processed. If you recorded the processed sound, then the recorder playback can be heard through the AUX input.

AUDIO RECORDER IS USED (version 2)

If your preamp/amp/receiver does not have a separate AUX input, connect the *De-Hisser* output directly into the record input of the recorder, and connect the recorder's output to the amp's MON IN or TAPE IN input. Then for normal listening of the *De-Hisser*, monitor the tape recorder. If the tape recorder has a

# BASIC CONNECTION OF DE-HISSER

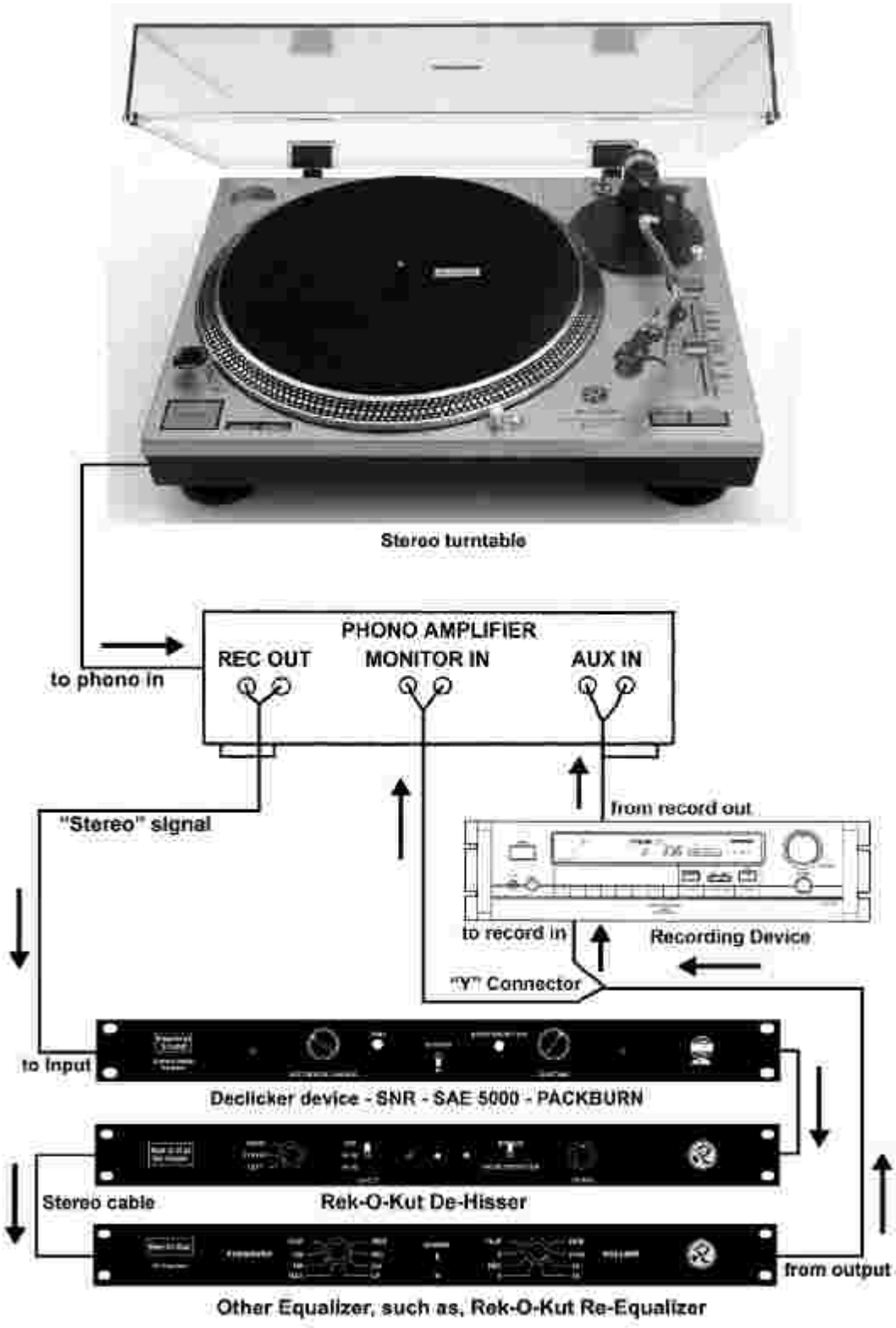



**FIGURE 1**

MONITOR switch, it must be in SOURCE to do this. If you recorded the processed sound, then recorder playback can be heard by switching the recorder's MONITOR switch to PLAY.

These are only suggested connections. Connection to your system will depend upon the related equipment and your specific requirements.

## SPECIFICATIONS:

| | |
|---|---|
| Frequency Response: | 20-20 kHz, +/- 0.5 dB |
| Signal to Noise Ratio: | >90 dBA |
| Distortion: | 0.05% |
| Noise Reduction: | 10 dB |
| Min. Audio Response: | 2.5 kHz |
| Max Signal: | 4 Volts RMS |
| Controls: | Input, Lo-Cut, Dehiss, Bypass |
| Low Cut: | 40 Hz, 80 Hz |
| Power source: | 120/240 VAC, 50/60 Hz |
| Dimensions: | 19" x 1-3/4" X 7" |
| Weight: | 5 lbs |
| Accessories: | Universal Wood Cabinet |

## OPERATION:

INPUT SELECTOR (Requires Stereo Phono Cartridge)

Leave this switch in the STEREO position with most records. With a mono record, switch to LEFT or RIGHT and determine if either groove wall is quieter. If neither, return it to stereo. If one groove wall is quieter, use that switch position.

When used in either RIGHT or LEFT, the input selector switch cancels out vertical rumble. This switch cannot be used to isolate the left or right channel of other sources, such as left only or right only from a multi-track tape. If you wish to do so, you must turn the volume of the undesired channel all the way down at the source. Then, your *De-Hisser* will output only that channel from both of its outputs.

DEHISS

Observe the LEDs when operating the DEHISS control. When all LEDs are illuminated, there is no noise reduction. The red LED indicates a low bandwidth. The yellow LED indicates a moderate bandwidth. The green LED indicates that the highest frequencies are being passed.

While playing a soft portion of the source, gradually rotate the DEHISS control from full clockwise to counter-clockwise. At some point, there should be a dramatic decrease in background noise (probably 12:00 to 2:00). You may want to advance the control just a bit more. With wide range material, most of the LEDs will be blinking on and off. If none are illuminated, you have greatly overdone it.

With vintage records, such as 78 rpm discs, usually only the red LED will be blinking on and off (probably at a DEHISS setting of 9:00 to 10:00). Careful adjustment is necessary with old and worn records.

LO-CUT

Use this switch to reduce low frequency noise present in some recordings. The 40 Hz position will suffice for many noise plagued LP records and 78s, while the 80 Hz position may prove useful with old acoustic records, records requiring severe turnover settings, or sources with hum.

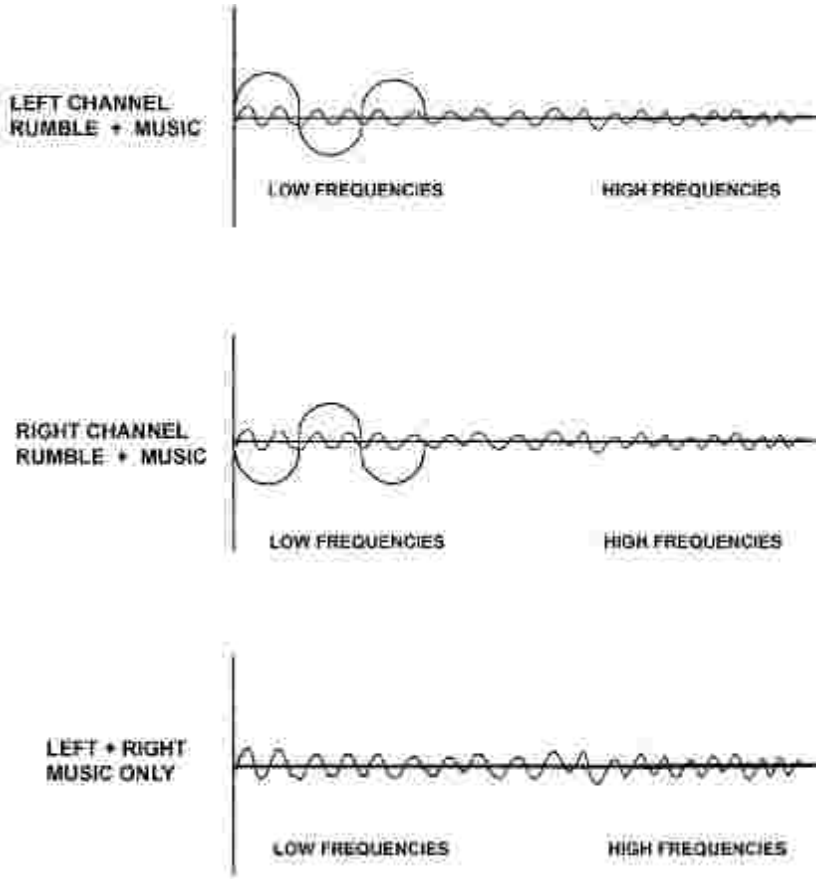
BYPASS

When in BYPASS, the signal is hard-wire routed from input to output without any intervening circuitry. When switched to NOISE REDUCTION, all the processing circuits are introduced to the signal path.

## CIRCUIT EXPLANATION:

INPUT SWITCHING CIRCUIT

Rumble is the result of mechanical noises produced by turntables and is also incurred during the recording and manufacturing of disc records. The design of the our stereo disc system results in the left and right channels of a phono cartridge producing this low frequency rumble out of phase.




Monophonic records should be reproduced with the amplifier's mode control set to mono. If such a switch is not available, then some means should be made to connect the left and right outputs together. This greatly diminishes low frequency rumble and results in a much cleaner sound. This is illustrated by the above three drawings, which represent the music with low frequency noise superimposed. The low frequency rumble is shown as "out of phase" in the right and left channels. When the left and right channels are added together, this noise cancels out. No filtering is used.

When one encounters a monophonic record that has more damage or wear to one groove wall compared to the other, it is advantageous to reproduce only that one groove wall and to ignore the other. If we do this, then we will lose the advantage discussed above. The rumble will be heard with no diminishment. The circuit employed in the *Rek-O-Kut De-Hisser* solves this problem. When the mode switch is used to select one groove wall or the other, it permits the low frequency component of the other channel to be

added to that of the one selected. This results in greatly reduced rumble as compared to simpler systems.

HISS REMOVAL

In the past, a number of products were produced to reduce high frequency noise, such as hiss. The simplest were referred to as "scratch filters." They simply removed or filtered out the higher audio frequencies where hiss and record scratch noise are usually produced. The unfortunate result of this is that the higher frequencies of music are also removed.

Later devices were more sophisticated. They were "variable cutoff" filters. The device would automatically adjust the maximum frequency that could be heard to correspond with the highest frequency in the music. Technically, these units worked better than the fixed "scratch filter, "mentioned above, but the side affect was a "swishing sound" being produced in the background hiss. This called attention to the process and was often referred to as "pumping." In spoken word programming, it was quite annoying.

The *Rek-O-Kut De-Hisser* uses another technique. Hiss removal is accomplished not by a variable hi-cut circuit, but by filtering individual octaves of the program material. Sometimes only medium high frequencies are attenuated and higher frequencies passed. Also, the maximum amount of noise reduction is limited to 10 dB. This results in almost no audible pumping of hiss with program material and excellent performance even with spoken word.

LO-CUT FILTER

This filter is a switchable, low frequency cutoff filter which reduces the audio produced at lower frequencies either below 40 Hz or below 80 Hz. All noise and music below either of these selected frequencies will be attenuated. These are brute force filters and designed to solve brutal noises such as loud rumble, thumps, or hum. They are however not so aggressive as to drastically affect music.

****** LIMITED WARRANTY ******

This unit is fully warranted against defective materials or workmanship under normal use for the warranty period of one year from time of purchase to the original owner. During the warranty period of one year, repairs, adjustment for defects or replacement of parts will be performed free of charge, except:

a) If equipment has been damaged by accident or mishandling.
b) If equipment has been serviced or modified by other than our authorized agents.
c) In case of theft, loss, flood, fire or other calamities by Acts of God.

All liabilities and damages are limited to the purchase price paid by the consumer excluding taxes and shipping costs.

Return authorization must be obtained before making any return. **Unit should be returned in it's original packing, otherwise cost of repair for damage incurred will be charged**. We can advise you as to alternate proper packing should this not be available. Such returns should be accompanied by payment of **$12.00** for shipping and handling. Foreign purchasers should remove the *Rek-O-Kut De-Hisser* 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.

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