

THÖRESS

Parametric . Phono Equalizer . Series

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"THE PHONO ENHANCER MKIII"



INSTRUCTION MANUAL

Thank you for purchasing a phono preamplifier from our Parametric Phono Equalizer Series.

This exceptionally versatile vacuum tube phono preamplifier allows on-the-fly adjustment of the phono equalization characteristic (the gain versus frequency behaviour of the amplifier) within very wide limits by means of three 6-position rotary switches TCSW1, TCSW2 and TCSW3 assigned with the three edge frequencies f_1 , f_2 and f_3 of the phono de-emphasis curve. A design choice which obviously justifies the term PARAMETRIC PHONO EQUALIZER. The tone selectors TCSW1, TCSW2 and TCSW3 act as bass, middleton and treble controls respectively. The favourable control range of each selector relevant for practical purposes has been determined and optimised by ear trough evaluating hundreds of vinyl records. In this manner we have created subtle yet most effective tone control functions without any additional clumsy and sound destructive tone control circuitry.

The three tone selectors can be used to compensate for sound degrading artifacts and tonal imperfections which may have been introduced during the recording or cutting process of a given record. As a result, optimum tonal balance may be restored even to poorly mastered or manufactured vinyl program. Therefore we claim our preamplifier to be a PHONO ENHANCER. It is well known that tone control is especially beneficial for the reproduction of early monophonic vinyl records. However, most early stereophonic records and even poorly produced modern records can considerably benefit from these tone control facilities as well.

As a side effect of our unique implementation, the entire range of phono equalization curves used by the prominent record labels throughout history, including early pre-microgroove 78-rpm curves, can be activated by choosing appropriate selector settings. With selectors in default position the preamplifier provides highly accurate RIAA equalization, the most widely used equalization curve identical with the NEW ORTHOPHONIC curve established by RCA along

with the microgroove vinyl disc in the early days of stereophony.

Thanks to its unique tone control facilities the preamplifier will allow the user to listen much more deeply into the grooves of any kind of record than with a phono preamplifier restricted to RIAA de-emphasis, while offering the utmost refinement in sonic presentation. Making it a reference device which will easily measure up to the expectations of even the most critical and experienced music enthusiast or professional user. It is the perfect complementary phono preamplifier to partner with the THÖRESS Dual Function Amplifier.

Please read the following explanations and instructions carefully to get the most out of your preamplifier.

DE-EMPHASIS AND TONE CONTROL

The gain of a phono preamplifier varies with frequency so as to restore (mirror) the pre-emphasis introduced to the wanted signal during the cutting process of a record. Therefore a phono preamplifier is sometimes referred to as a phono equalizer (german PHONO ENTZERRER). The gain is high at low frequencies (bass boost) and low at high frequencies (treble attenuation) with respect to 1000 Hz, the middle point of the audio band, so to speak. The respective gain versus frequency function (equalization curve) is defined by a triple of edge frequencies (sometimes specified by means of so called time constants)

f_1 =bass roll-off; f_2 =bass-middletone turnover; f_3 =treble roll-off

which determine the amplifiers de-emphasis characteristic. The slope of the de-emphasis curve approaches 6dB/octave inbetween the turning points given by the edge frequencies.

The Phono Enhancer performs highly accurate RIAA de-emphasis when the tone selectors rest in default position, (TCSW1, TCSW2, TCSW3)=(6, 6, 1) ---> (f1, f2, f3)= (50Hz, 500Hz, 2124Hz).

Tonal manipulations by edge frequency SHIFT with the aid of the three tone selectors have a much stronger impact in restoring a satisfactory overall tonal balance of a given vintage vinyl record when adjusted

intuitively by ear

rather than coosing the de-emphasis characteristic to formally suit the record company and the vintage of the record in terms of edge frequencies. Simply because, in practise, the tonal difference between individual vinyl records, even between those issued by the same record company in the same period of time, prove to be much more pronounced than the differentiation in tonality

given by even the most distinctive de-emphasis characteristics established in the pre-RIAA microgroove era. In fact, the difference between these various characteristics is rather small, often negligible, whereas in the most cases the bass-turnover frequency (the most crucial edge frequency) is 500Hz.

De-emphasis curve selectors on phono preamplifiers are not suitable for restoring optimal tonal balance in the context of vintage record playback. They are puzzling to the user!

By contrast, conventional bass-and-treble tone control is achieved by boost and attenuation adjustment in the context of a FIXED edge frequency. This facility is much too coarse for appropriate tonal restoration and goes along with clumsy sound destructive circuitry.

The Enhancer-s tone control functions have been implemented without the aid of additional clumsy and sound degrading conventional tone control circuitry!

To determine which the selector setting provides the most satisfactory tonal balance for a given record, proceed as follows:

STEP 1.

Adjust the SONIC PRESENCE with TCSW2 .

Edge frequency f_2 ==> MITTELTON, middletone.

Listen carefully to the record with tone selectors in default position (6, 6, 1). Turn TCSW2 (counter-clockwise) to a lower position as long as a certain sharpness in the sonic presentation is observed. This manipulation increases the crucial bass-turnover frequency f_2 and such gives rise to a warmer sound characteristic. Conversely, turning this switch (clockwise) to a higher position lifts the presence of the sonic presentation, whereas the sharpest (most vivid) presentation is associated with position 6 (RIAA, $f_2=500\text{Hz}$).

Determining the optimal position of TCSW2 is a crucial part of the sound enhancing procedure!

STEP 2.

Determine the optimal DISTANCE AND EXTENT OF THE SOUNDSTAGE by adjusting TCSW1.

Edge frequency f_1 ==> BASS.

Lowering the position of TCSW1 will add bass extension to the sound image (bass boost below 100 Hz) in a subtle way and such leads to a presentation with more punch and impact. Moreover, the sound stage will appear larger and more far away.

Weak low end extension of the programm can be compensated by lowering the position of TCSW1!

The boosting obtained by lowering the position of TCSW1 is a relative one, gained at the expenses of reduced mid band loudness with respect to the low frequency end. Consequently, the volume dial ought to be re-adjusted on the line device after each movement of TCSW1 in order to maintain the mid-band volume of the former sound image.

Tune the listening volume on the line device so as to counteract the change of mid band loudness whenever adjustments have been made with TCSW1!

Lowering the position of TCSW1 will also smooth out any sharpness possibly left in the sound image after step one has been taken. This effect is more pronounced the lower a position has been formerly chosen for TCSW2. Thus a record which is exceptionally thin and sharp sounding with RIAA settings will sound more appealing when both dials, TCSW2 and TCSW1 are set to lower positions. As early mono and stereo records were often heavily cut at the low end of the audio band, the bass boosting facilities given by TCSW1 and TCSW2 will be found very effective in restoring the original sound image of an old recording session.

STEP 3.

Tune the BRIGHTNESS with TCSW3.

Edge frequency f_3 ==> TREBLE, HÖHEN.

Finally, attention should be given to TCSW3. This switch acts in a similar manner as the treble knob of a conventional bass-and-treble tone control function, although its effect is considerably more subtle. Turning this knob (clockwise upwards) to a higher position lifts f_3 , such reduces the amount of treble attenuation in the de-emphasis and therefor leads to a brighter sonic presentation. When TCSW3 rests in position 6 the amplifier response is flat above the bass-turnover frequency f_2 (zero treble attenuation) and gives an adequate setting for playback of 78rpm records, which are cut without treble pre-emphasis.

Many early microgroove mono records sound more appealing when the treble switch TCSW3 is set to an elevated position in order to brighten-up the sonic presentation. However, as an unwanted side effect of treble boosting, groove noise may become more clearly audible and sound quality must occasionally be sacrificed to a certain degree in order to keep the groove noise floor at an acceptable level (especially when the record is in poor condition). Hints regarding effective record cleaning can be found at the end of this manual.

Record cleaning should be considered as a crucial activity for all vinyl lovers who wish to obtain the full benefits from the Phono Enhancer!

STEP 4.

Verify the determined selector settings .

RECORD THE OPTIMAL PATTERN FOR LATER REFERENCE.

After all three steps have been carried out the switch positions of TCSW1, TCSW2 and TCSW3 established so far should be recorded as a temporary result. Finally, critically check and re-consider this setting by switching the selectors one or two steps upwards and downwards from the previous optimum for re-evaluating the corresponding sound images (by ear). Once a final decision upon the optimal selector settings has been made, the result might be written on the inner record sleeve for later reference.

PHONO CARTRIDGES

Early microgroove records carry a monophonic signal written into a LATERALLY excited triangular spiral grooves of constant depth. They were originally meant to be tracked by a spherical stylus with 25-micron-spike-radius mounted on a mono-flexible cantilever. A monoflexible cantilever is one with zero compliance in vertical direction.

The groove of a stereophonic record carries two signals (more or less sharply separated from each other) coded LATERALLY AND VERTICALLY into the groove by means of a variable depth of the groove relative to the record surface along with the lateral groove excitation. Conversely, A stereophonic cutting head produces a laterally excited groove of constant depth when fed with identical signals on both channels, thus a monophonic groove. A groove obtained in this manner is slightly narrower than an early FIRST-GENERATION monophonic microgroove, due to new groove standards introduced for stereophony, whereas a smaller spike radius of 17 microns was specified for the tracking such a narrow SECOND-GENERATION microgroove.

In order to faithfully read stereophonic grooves a cartridge needs to be fitted with an omniflexible cantilever, which is one with compliance in all directions!

A Phono Cartridge with monoflexible cantilever accidentally used for tracking a stereophonic vinyl record will instantly harm the groove!

During the stereophonic era more sophisticated diamond profiles (Shibata, Micro Ridge, Gyger, Van-den-Hul etc) have been developed from the simple spherical 17 micron tip in order to reduce tracking distortion, particularly the so called pinch effect. These modern diamond profiles also reduce record and

stylus wear on account of an increased contact area (line contact) between the diamond spike and the groove walls.

Phono Cartridges with a sophisticated diamond profile tend to drastically outperform cartridges featuring a stylus with simple spherical profile!

A phono cartridge with a spherical 25-micron stylus can faithfully track narrow SECOND-GENERATION microgrooves (possibly with reduced tracking ability), although this type of tip was originally intended for tracking FIRST-GENERATION monophonic microgrooves!

A phono cartridge with a spherical 17-micron-tip (or one of its modern derivatives) is able to faithfully track FIRST-GENERATION monophonic microgrooves, although this type of tip was originally intended for tracking SECOND-GENERATION microgrooves!

The majority of currently produced, high-grade, monophonic MC cartridges are derivatives of stereophonic models and as such employ a dual-coil generator (2x2 output terminals) with an OMNIFLEXIBLE stylus. The only difference to the corresponding stereophonic variants is that the generator coils are not arranged at a 45-degree angle to the tracking plane, as it is needed for stereophonic reading. Examples of omniflexible, dual-coil, mono cartridge models are the AUDIO TECHNICA AT33-Mono, the LYRA mono cartridges and the DYNAVECTOR DV-X1s-Mono.

MONOFLEXIBLE, single-coil (2 output terminals) MC cartridges of ultimate quality and sonic capabilities are currently made by Hyun Lee (TEDESKA Pick-up Technology) in Germany. Tedeska cartridges feature a sophisticated proprietary diamond profile and a novel generator principle. Other examples of monoflexible, single-coil MC cartridges of current production are the mono cartridges offered by MIYAJIMA LAB from Japan, all of which models feature simple spherical diamond profiles.

Use a monophonic TEDESKA cartridge or a DYNAVECTOR DV-X1s-Mono for ultimate monaural microgroove playback!

Examples of classic monoflexible, single-coil cartridges are the ORTOFON Mono CG25 and the EMT OMD25. These pick-up heads offer an amazingly good sonic presentation even when judged by today's standards, however they cause excessive record and stylus wear due to their spherical diamond profile and tracking weights in excess of 4 grams, especially when combined with vintage tonearms without anti-skating facility. Therefore their use is questionable when maximum sound quality and preservation of valuable records is the main goal. Nevertheless, they will be an obvious choice when the aim is to build an

authentic vintage HiFi setup for monaural playback.

Stereophonic grooves are mono compatible in a two-fold sense:

At first, any stereophonic cartridge is able to read both, early and second-generation monophonic microgrooves faithfully whereas identical signals will be developed in both generator coils. Hereby the omniflexible stylus of the stereo cartridge theoretically is exposed to lateral excitation only. However, in practise unwanted vertical movements of the stylus due to groove imperfections (warp, dirt, scratches) will be converted into signal and such add noise artifacts to the wanted signal.

A high-grade stereo cartridge with a sophisticated, modern diamond profile is most suitable for faithfully tracking both early and second-generation monophonic microgrooves. Furthermore, it will most likely be SONICALLY SUPERIOR to a dedicated mono cartridge which utilizes only a simple spherical profile. However, it will tend to produce slightly more groove noise than a dedicated mono cartridge!

Secondly, every omniflexible monophonic cartridge is able to faithfully track stereophonic grooves and converts the more or less sharply separated signals of the R and L channels back into a consistent mono signal. Hereby only lateral movements of the stylus are converted into audio output.

The signal generator of a dedicated mono cartridge ignores vertical stylus movements and therefor tends to produce lesser noise artifacts due to vinyl disc imperfections (warp, dirt, scratches) in comparison to a stereophonic cartridge!

LATERAL 78RPM RECORDS

The coding of lateral 78rpm record grooves, so called STANDARD grooves, is similar to the coding applied for monophonic microgrooves: laterally excited triangular spiral grooves of constant depth. However, standard grooves are considerably wider (and deeper) than early or second-generation MICRO-grooves. They are meant to be tracked by a spherical stylus with 65 micron tip radius. In view of their limited fidelity 78 rpm records can be adequately reproduced with a simple stereophonic moving magnet (MM) cartridge from current production (with appropriate tip radius).

78 rpm records with standard grooves can be adequately tracked with a low cost stereophonic MM cartridge from current production with spherical stylus with 65 micron tip radius!

As 78rpm records were cut without treble-pre-emphasis and tend to lack bass

extension, they will likely sound best with f_3 at infinity (no treble attenuation), lowest possible f_1 (maximal low frequency extension) and bass-turnover frequency $f_2=500\text{Hz}$ (RIAA). Thus:

(1, 1, 6) is the most suitable selector setting for adequately reproducing 78rpm records with standard grooves!

Even when, on paper, a turnover frequency lower than 500Hz happens to be specified for the record in question. Nevertheless, lower bass-turnover frequencies than 500Hz can be easily implemented on some positions of TSCW2 on demand, for those users who specialize in 78rpm disc playback and request formally correct bass-turnover frequencies.

PHONO INPUTS

The Phono Enhancer offers 6 inputs with a gain pattern (5xMC+1xMM) in the standard version. The MC/MM gain is 65dB/45dB at 1kHz respectively. Alternatively, a gain pattern (1xMC+5xMM) can be implemented on demand. However:

It is not possible to install arbitrary MC+MM gain patterns for technical reasons!

Monophonic MC cartridges with DUAL-COIL generator can be used on any MC input of the Enhancer without restrictions and further adaptations!

The Enhancer also allows for dual-channel mono playback with single-coil MC cartridges on each individual input, whereas up to 2 single-coil cartridges can be installed simultaneously. But in such a case specific precautions must be taken to double the mono signal in such a manner so as to avoid residual hum.

DUAL-CHANNEL MONO PLAYBACK

When the 4 terminals (L-hot, L-ground, R-hot, R-ground) of a stereophonic phono preamplifier with non-balanced circuit topology are wired to a single-coil cartridge, in an attempt to distribute the monophonic signal over the both channels for installing dual-channel mono playback, L-ground and R-ground will unavoidably meet at the cartridge terminals (2-terminal) or within the cartridge body (4 terminals with 2 pairs of terminals connected in parallel) through the leads of the stereophonic tonearm cable. This unwanted conductive connection will result in residual hum due to the so called GROUND LOOP effect.

Single-coil phono cartridges cause residual hum when they are wired to both inputs of a stereophonic phono preamplifier with non-balanced circuit topology!

The key to hum-free dual-channel mono installation with a single-coil cartridge in the context of phono equipment with non-balanced circuitry is to double the signal at the output of the phono preamplifier rather than at the cartridge terminals, in the following manner:

SINGLE-COIL MONO INSTALLATION

STEP 1.

Precautions at the input. The yellow jacks.

Connect the R-plug of the (stereophonic) tonearm cable with the R-jack of the desired phono input. Insert the respective L-plug in one of **the yellow jacks** (labeled with SINGLE-COIL MONO) below the phono inputs. These two jacks are completely isolated from the circuit and merely fulfill the purpose of providing a (mechanical and electrical) termination for the L-channel lead of tonearm cable. Finally use a screw terminal to connect the ground wire of the tonearm cable to the preamplifier chassis. This installation obviously avoids a conductive connection between L-ground and R-ground and such ensures hum-free amplification of the mono signal in the R-channel section of the phono preamplifier, while the respective L-channel section is running idle.

SINGLE-COIL MONO INSTALLATION

STEP 2.

Precautions at the output.

Choose an unassigned input of the line preamplifier. This input, in the following denoted by SCMO for the sake of convenient explanation, is EXCLUSIVELY reserved for dual-channel mono playback (aside the input STE employed for ordinary stereophonic listening). Install a second pair of interconnect cables IC2 between the Phono Enhancer and the line preamplifier, in addition to the existing cable connection IC1 used for stereo playback, as follows: Insert BOTH plugs of IC2 into arbitrary unassigned R-channel output jacks of the Enhancer (easily possible since the Enhancers features 3 outputs). Then connect the plugs of IC2 to the R and L channel jacks of the input SCMO in the usual manner. This installation (Y-connection) obviously distributes the R-channel output signal of the Phono Enhancer over both amplifier sections of the (stereophonic) line preamplifier and in this sense doubles the mono signal. Finally, select input SCMO on the line device in order to activate the dual-channel playback mode, after the desired single-coil cartridge has been switched active on the Phono Enhancer. Do not forget to switch back to the line input STE when employing a

stereophonic cartridge, because:

The system reproduces twice the R-signal of a stereophonic cartridge (rather than a proper stereophonic signal) when SCMO is accidentally left active on the line device!

Some phono devices feature a so called MONO SWITCH for dual-channel mono playback. Here the monophonic signal is fed to the L and R input of the phono preamplifier in the usual (stereophonic) manner, processed (and distorted) in the initial L and R amplifier stages, at some point MIXED together and then fed to the L and R inputs of the following amplifier circuitry. Hereby the residual hum introduced to the wanted signal in the initial amplifier stages cancels away during the mixing process. At the expenses of increased distortion. Obviously a clumsy and sound destructive concept.

Mono Switches on stereophonic phono preamplifiers are sound destructive and therefor not suitable for dual-channel mono playback, if ultimate sonics is the aim!

CARTRIDGE LOADING

Each phono input of the Enhancer allows for customized cartridge loading by means of (standard axial lead) resistors soldered to tags adjacent to the corresponding jacks. The standard cartridge load preset on (5xMC+1xMM) units is (100R, 200R, 300R, 500R, 1000R // 47K) respectively. A variety which is believed to cover all possible applications. Nevertheless, other resistor values can be installed on request and these values can be changed later on whenever it is desired. The standard cartridge load preset on (1xMC+5xMM) units is (100R // 47K, 47K, 47K, 47K, 47K).

The MC load resistor values installed on each individual MC gain input are printed on the rim of the rear panel for reference!

SWITCHING NOISE

The Enhancer outputs a pronounced bump when the input selector is moved between phono inputs with different gain levels (MM>MC or MC>MM). This effect is inavoidable. The bump will obviously remain inaudible and without impact when the volume control on the line device is set to a very low angle position before moving the phono input selector. If the switching transient accidentally reaches the power amplifier and thus the speakers, no harm will occur within a setup composed of THÖRESS components, even then when our higher power amplifiers (SE845 or EHT mono blocks) are part of the

system. However, there might be worst case scenarios beyond our imagination (solid state amplifiers with huge power output or weak protection circuitry) where serious harm can occur in the system when the switching transient accidentally reaches the power amplifiers in full magnitude.

It is strongly advisable to set the volume control on the line device to a very low angle of rotation before switching between phono inputs with different gain levels (MC > MM or MM > MC). Otherwise the switching transient can cause serious component damage in worst case scenarios!

Residual noise also occurs when the user switches between phono inputs with the same gain status, due to the extreme input sensitivity common to every MC gain device. The magnitude of the residual switching noise is also dependent on the phono installation in as much as it is proportional to the difference of the EFFECTIVE RESISTANCES (internal resistance of the cartridge in parallel with the associated load) seen by the phono circuit on the adjoining phono inputs in question.

The Enhancer amplifies the thermal noise of the MC load resistors as long as the jacks of a MC gain input are left open (no cartridge connected). The more or less pronounced hiss emitted at the outputs will instantly fade away as soon as a cartridge is connected to the input in question. Similar relations hold for the MM gain input!

SIGNAL-TO-NOISE PERFORMANCE

Much care has been taken in arranging each aspect of the internal construction of the Enhancer to achieve an extraordinary signal-to-noise performance. If properly installed, the Phono Enhancer delivers noise-free operation in MC mode, even with cartridges with an output characteristic as low as 0.2mV@5cm/sec, or even lower in a PURELY ACTIVE operation mode, without the aid of additional step-up transformer gain stages.

In spite of its purely active operation mode the Phono Enhancer offers stunningly good signal-to-noise-performance with MC cartridges with output characteristics as low as 0.2mV@5cm/sec, or even lower!

However, electro-magnetic stray fields emitted by other devices positioned in the vicinity of the Enhancer may under circumstances induce hum into the phono circuit, particularly when the Enhancer is operated in MC mode.

The Enhancer requires considered placement for hum-free operation in MC mode!

The highest possible immunity of the Enhancer against electromagnetic

interference will likely be attained when the amplifier is placed on the very right hand side of the rack!

The Enhancer is equipped with new-old-stock tubes (1xPCC88+2x6J5GT) carefully tested to meet tight specifications. They are hand-picked for low microphony and low noise. It is strongly advisable to use only the carefully tested tubes supplied by the manufacturer.

The use of tubes of questionable quality may lead to degraded sonics and inferior signal-to-noise performance. Even serious damage may occur in worst case scenarios!

Always remove all tubes from their sockets and put them in their original transport box before shipping or transporting the amplifier!

Never switch on the preamplifier until all tubes have been placed into their sockets!

Never pull a tube out of its socket while the preamplifier is switched on!

Never pull a tube out of its socket while it is still hot!

Keep the original crate and the tube box for later use. They have been specifically designed for safe transport of the Phono Enhancer under rough conditions!

SUBSONIC ARTEFACTS

Coupling capacitor values between the amplifier stages of the Enhancer have been carefully chosen to give a very low cut-off frequency (so as not to compromise frequency and phase response at the low end of the audio band), while providing a certain amount of attenuation of eventual low frequency artefacts due to record warp. However, the Enhancer does not incorporate dedicated subsonic filters.

The Phono Enhancer does not feature high-slope active subsonic filters of whichever kind!

Our preamplifier will therefore not mask (but reveal) issues due to improper phono installation. As they occur when the turntable is poorly isolated from the rack. Or when the resonant frequency of the tonearm-cartridge-combination is too low. Whereas a worst case scenario obviously will arise when both problems meet.

High-slope active subsonic filters, as they are found on solid-state phono preamplifiers employing operational amplifiers ICs, do not solve but only mask phono installation problems while compromising sound

quality!

OUTPUTS

The Enhancer comprises 3 outputs (connected in parallel). A feature which is advantageous for proper hum-free dual-channel mono playback installation in case of single-coil cartridges as described in the relevant chapter of this manual. The output impedance is very low so that the user can employ long interconnect cables without compromising sound quality.

If our Dual Function Amplifier is used for line amplification it is advisable to connect the Phono Enhancer to one of the high gain inputs 1, 2 or 3 (rather than inputs 4, 5 or 6) for optimal sonic results!

If our Full Function Preamplifier is used for line amplification it is advisable to connect the Phono Enhancer to the high gain line input for optimal sonic results!

SETUP

To set up the Phono Enhancer, switch off all powered devices in the setup and proceed as follows:

Do not connect the unit to the mains until steps 1 to 8 have been taken.

1. Make sure the front power switch of the Enhancer is set to OFF (AUS) and the selectors TCSW1, TCSW2 and TCSW3 rest in default position (RIAA de-emphasis).
2. Bring the main power switch of the unit on the power inlet module into the ON position.

Switch off the preamplifier at the power inlet when the unit will not be used for a longer period of time!

3. Bring the ground lift switch (GLSW) on the rear panel to position ERDE (unit grounded). With this GLSW setting the unit receives earth potential through the ground lead of the power chord. To overcome hum due to ground loops which typically occur when more than one device within the setup is grounded (conductive connection between the circuit zero potential and mains ground) it may be necessary to interrupt (lift) the ground connection of the preamplifier by bringing the GLSW into the LIFT position.

Use the ground lift switch to overcome residual hum in the setup due to ground loops, if necessary!

4. Remove the top lid from the amplifier case and install all tubes carefully.

Take care to tighten the screws properly when closing the amplifier case to ensure a conductive connection of the lid with the chassis.

Improper grounding of the top or bottom lid will result in residual hum!

Never power on the preamplifier unless ALL tubes have been installed!

Never pull a tube out of its socket while the preamplifier is powered on!

5. Bring the Enhancer into the final position and connect all cartridges which to suitable phono inputs. Do not forget to connect the ground lead of the tonearm cables to one of the ground screws adjacent to the phono inputs. If one or more single-coil mono cartridges shall be used in dual-channel mono playback mode, follow the instructions presented earlier to ensure proper installation.

6. Select the phono input desired for playback with the source dial.

7. Connect the Enhancer to the line preamplifier (or integrated amplifier).

If our Dual Function Amplifier is used for line amplification it is advisable to connect the Phono Enhancer to one of the high gain inputs 1, 2 or 3 (rather than 4, 5 or 6) for optimal sonic results!

If our Full Function Preamplifier is used for line amplification it is advisable to connect the Phono Enhancer to the high gain line input for optimal sonic results!

8. Select the input to which the Phono Enhancer is connected on the line device and set the volume control of this component to a very low angle of rotation. In case a single-coil mono cartridge has been chosen for dual-channel mono playback, make sure that the line input SCMO (as described above) is switched active on the line device. Do not forget to switch back to the line input STE when employing a stereophonic cartridge, because:

The system reproduces twice the R-signal of a stereophonic cartridge (rather than a proper stereophonic signal) when SCMO is accidentally left active on the line device!

9. Connect the Enhancer to the mains.

10. Power on the Enhancer while the line preamplifiers and the power amplifiers remain powered off. Wait for about one minute until the warm-up process on the unit has come to an end.

10. Power on the line device, while the power amplifier remains powered off. Again wait for about one minute until the warm-up process on the line amplifier has come to an end.

11. Switch on the power amplifiers.

12. Enjoy listening to vinyl records and use the Enhancers tone selectors TCSW1, TCSW2 and TCSW3 to attain optimal tonal balance by following the

instructions given in the relevant paragraph of this manual.

When powering off the system, always switch off the power amplifiers first, then the line device and finally the phono preamplifier, observing a delay of at least 30 seconds inbetween each step!

Never switch the phono preamplifier on or off as long as the line device and the power amplifier are powered on!

Keep the original crate and the tube box for later use. They have been specifically designed for safe transport under rough conditions!

ULTRASONIC RECORD CLEANING

It has been pointed out earlier that groove noise may become more clearly audible when treble boosting is applied for enhancing the sonic presentation of a record. Therefor:

Record cleaning is a crucial activity for all vinyl lovers who wish to fully exploit the benefits of the Phono Enhancer!

The most effective methode for cleaning vinyl records is the 4-step method described below. Employing an industrial grade 6 liter ultrasonic cleaning machine (USCM) such as the EMAG Emmi-60H (made in Germany) and the KUZMA RD rotator kit.

Step 1: Roughly clean a lot of 5 records with a microfiber cleaning fabric.

Step 2: Let the records simultaneously rotate in the USCM bath filled with demineralized water (USCM heater set to 45 degrees celsius) and a few drops of dish cleaning concentrate for at least half an hour with the aid of the KUZMA rotator.

Setp 3: Take the records out of the bath one after another and vacuumize them on a conventional record cleaning machine such as the Nitty Gritty or Okki Nokki while they are still wet. The vacuumizing procedure is absolutely crucial and cannot be ommited. Air or blow-drying the records after the USCM cleaning step is highly counterproductive.

Step 4: Put the record in a pristine sleeve imediately after steps 1 to 3 have been taken.

The four-step ultrasonic cleaning procedure described above is by far the most effective method for cleaning vinyl records!

FEATURES & SPECIFICATIONS

- Highly versatile vacuum tube phono preamplifier.
- MC gain with state-of-the-art signal-to-noise-performance in purely active operation mode (without step-up transformers).
- Minimalist non-balanced zero-feedback schematic with passive de-emphasis installation.
- Unique contemporary vacuum tube schematic employing (2x6J5GT+1xPCC88) vacuum tubes.
- All edge frequencies of the equalizing characteristic independently on-the-fly adjustable within wide limits by means of three 6-position rotary selectrors.
- Subtle but highly effective tone control facilities for restoring eventual tonal imperfections of the vinyl program; implemented without the aid of clumsy, sound-degrading conventional tone control circuitry.
- Entire range of phono equalization characteristics used by the prominent record labels throughout history can be activated by choosing appropriate selector settings. Equalization settings suitable for 78-rpm playback included.
- Highly accurate RIAA equalization with selectors in default positions.
- Real-to-reap tape NAB and IEC equalization settings can be installed on aside the phono settings on request.
- 6 inputs with phono gain pattern (5xMC+1xMM). Alternatively, a gain pattern (1xMC+5xMM) can be implemented on request.
- Cartridge load preset on standard units with (5xMC+1xMM) gain pattern is (100, 200, 300, 500, 1000; 47K). Other load values can be installed on demand.
- 3 outputs (RCA terminals) with very low output resistance.
- Full hand construction; point-to-point wiring throughout.
- Deadly quiet power transformer produced in-house to the highest possible standards.
- Mains voltages: 230Vac, 115Vac via jumper setting; customizable for 100Vac (Japan), 220Vac (South-Korea, Thailand, China ML, Russia, Indonesia) and 245Vac (Australia).
- Nonmagnetic aluminum casework; front and rear panel with anodized printing; powder coated lids.
- Amplifier dimensions: 434x434x154 mm, 154=134+footers/20.
- Dimensions of the shipping box: 650x550x350 mm; weight 10Kg.

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THÖRESS...

**A Tribute to Professional Audio Equipment
from the Golden Age of the Electronic Tube !**

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Tube Amplifiers & Loudspeakers