

GURUS

ECHOSEX 2°

T7E model

User's manual



Gurus Amps reserves the right to change technical features or look of his products in any moment without notice.
This product is pursuant to European Directives 89/336EEC

GURUS ECHOSEX 2° T7E model

Gurus would like to congratulate you on your purchase of your new Echosex 2° T7E Model. It is one of the most advanced Echo Unit ever created. In this Manual, we want to thank you, and share with you the principles that guided us on engineering it and some suggestions for using it for the best results! We hope this would help your creativity and better your sound.

The Echosex 2° T7E is not only a simple "Reissue" of the glorious "Old Italian Echo".. but an improvement of it. Our thinking was about what the well known issues of the old units were, and the different needs of the musicians of today.

Three main principles guided us in designing this unit, keeping always in mind that we wanted to reach two important goals:

- Create a real alternative to buying an old, expensive, unreliable and very rare unit.
- Create a device that really keeps the musicality and creativity of the "Old Italian Echo".

- 1) No mechanical parts in movement: absolute reliability in any condition, with no maintenance needed.
- 2) Improved Audio Quality: The insane frequency response of the Echosex 2° T7E, from 7Hz to 161KHz, and the DI Wet Out, make it a modern piece of gear, able to be connected to today highest professional studio grade devices.
- 3) With the "Motor Adj." you have the possibility to increase the overall delay time, reaching around 740ms keeping the Heads in Sync, so to make it suitable for a larger number of musical applications than it's predecessor.

- The First point is already very clear.. no mechanical parts means no maintenance needed, and this was the main issue for that kind of unit, and it was simply the best engineering way in the 50's, but today, we have better ways to be used to reproduce the magic without keep the pain of maintenance.

- Improving the Audio Quality was another important goal for us, as the quality of studio gear in the digital era needs very high quality standard for any device, so, we chose to design a Pure Class A preamp section made by Cascode J-FET to obtain the insane 7Hz to 161000 Hz @1db. frequency response range. So an outstanding linearity.

This LET came out the Magic of the "old italian Echo" in any condition.

- With our first Echosex 2°, that will stay available forever, we already demonstrate how that kind of magic could be great if applied to modern needs, by extending the delay time ability to 660ms. Imagine that it is used in records like Toto by Steve Lukather that use it for ALL of his soloing.. he would have never use an "old italian Echo" because it was not suitable for that kind of use having a limited time of 350ms.. So we chose to add also this feature to actual T7E model, and extend its possibilities by the heads combinations. With the Motor Adj. trimpot you can extend the overall delay time, keeping all the combinations syncd. It's like physically moving the heads around the spinning drum, keeping the same distance from each other...

The "Old Italian Echo" were massively used by a lot of bands, from famous Pros, to thousands of bands over the 60's and 70's and often it was the main effect on the PA, shared by all components of the band.. Today the needings of musicians are very different, but we think the unique ability of the "old Italian Echo" are still very actual, in fact our Echosex 2° is actually used by many pros in different musical styles, from Steve Lukather for all of its solos, to Albert Lee for insane country style. What they loved was its unique behavior of being an instrument in its own.. They often described it as a "creativity machine" and we're sure you will perfectly understand what they mean, after spending some time playing with it.

Terms of Warranty

Gurus product warranty covers 2 years from date of purchase with the exception of moving mechanical parts such as foot switches, speakers and handles which have a 1 year warranty. The valves, lights and cables are guaranteed for 3 months from the date of purchase. The warranty does not cover damage caused by accident, misuse and / or neglect, failure to comply with the instruction manual, repair and attempted repair by personnel not authorized by **Gurus Amps**, any damage caused during transport and delivery, (claims must be presented to the carrier); damage to any product that has been altered or on which it has been removed, defaced or altered serial number; damage caused by faulty connections or connections to equipment failures and/or defective power cables. Responsibility of **Gurus Amps** for any defective product is limited to repair or replacement of the product at our discretion. The **Gurus Amps** not be liable for damages resulting from loss of use of the product, lost time operation interrupted by non-use of the product, loss of business or any other damages or incidental, consequential or otherwise; damage in transit or damage caused by inadequate packaging or of poor quality.

Assistance: Please contact us for information on how, where and when to ship the product after the return has been Authorized by Gurus . The repaired goods should be packed carefully and we recommend not include any accessories such as cables, effects, manuals, etc. ... Please attach a copy of the original receipt of purchase (invoice or receipt) together with a problem description and your personal data.

THE WARRANTY IS NOT VALID WITHOUT A COPY OF YOUR RECEIPT OF SALE CERTIFYING THAT THE DATE OF PURCHASE.

The costs of labor and material guarantee shall be borne by Gurus Amps.

PACKING AND SHIPPING COSTS ARE ALWAYS WITH YOU

Introduction

Gurus has already had great success with the awarded Echosex 2°. Why a new version, and why the T7E model?

With the Echosex 2°, our goal was to recreate THAT way to treat the repeats, and mimic the Magic of the “Old Italian Echo” tube preamp, to make it so musicians are able to play with the same advantages of an “Old Italian Echo”, but with the “versatility” of a modern delay, where you can set the delay time of a single head.

With this version our goal is very different, we want to create a real alternative to buying an old, unreliable and insanely expensive real “Old Italian Echo” unit.

This is the hardest part of the decision is which version of the “Old Italian Echo”? There were many models yes, but the fact is that even in the same T7E model, each of units sounded so different from each other.

This was caused by:

- Tube circuitry tolerances
- Old components
- Wearing out of mechanical parts
- Wearing out of Heads
- Wearing out of rubber wheel
- Wrong alignment of Heads (there's a lot of tolerance for a right positioning)
- Wrong setting of internal trim pots (techs can set a lot of parameters.)

So it was not an easy decision to choose how our Echosex T7E should work, so we based our choice on:

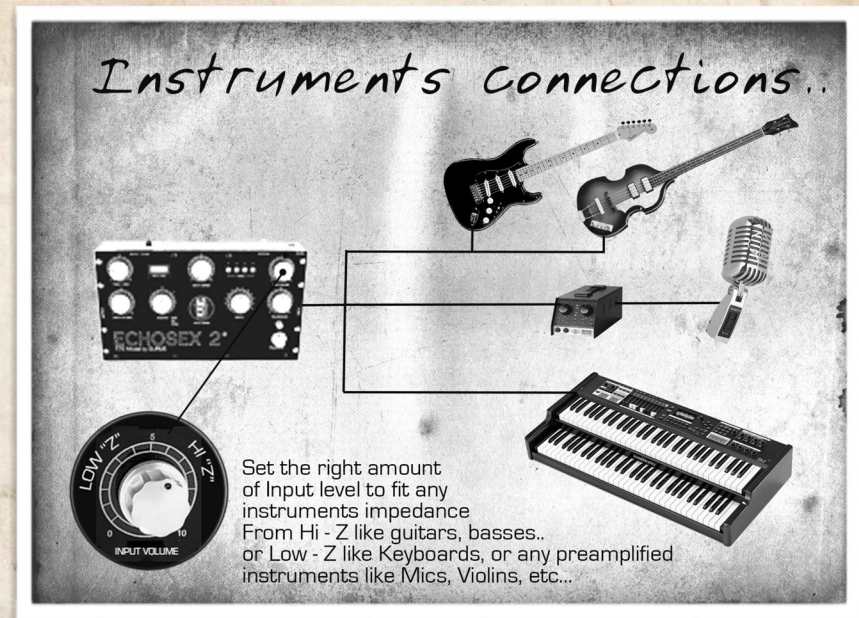
The matchless experience of our Chief Engineer who has serviced and restored hundreds of it in the past decades. (Almost every band and folk orchestra in Italy used one or more of them in the 60's!) So we know exactly the reasons for it's “magic”, how it sounds and especially how it sounded when it was brand new.



We did a lot of work measuring and making “averages” between about 20 “Old Italian Echo” units during this last year, working on settings, positioning of heads, trim pots settings, and an average of the state of degeneration. This “measurement” work involved heads positioning. You can easily find calculations online that talk of a max delay time of 296ms. Other musicians talk about 310 or 360 but the truth is that no one has the same max delay time. As I explained before, tolerances of parts are really high. Just to mention some: The AC motor speed depends by AC rate (50/60Hz) this would affect the speed of motor in a big way. so a unit can run at “XY” rpm in USA and a big different rpm rate in EU, and differently in other countries, or situations (like live gigs.)

Each of the Heads are fixed to chassis by 4 junction points with screws and a hole/screw can be slight moved due to the high tolerance of Non-Precision tools used at that time, and this will affect the precision of positioning. I'm talking about millimeters, that means a lot of ms. The motor's spinning tree is connected to the drum by a rubber wheel, positioned between the tree and the drum, and pushed against both of them by a spring. It happens that when the unit was not used for a while, and with the age, the rubber gets harder, and the spinning tree can do a hint on the rubber surface, and the same on the drum side, and it becomes “oval” and with hints and scratches on its surface. This causes a “non linear” spinning of the drum, and this generates that incredible kind of “modulation” until a random pitch shifting that we all love and reproduced with our “Age of Damage” control.

Connections



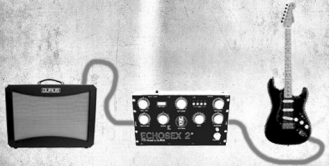
The Echosex 2° T7E let you use a variety of instruments both in low or high impedance, thanks to its Input Level Control (3) from a Guitar with single coils pickups to a Line level Keyboard, or any preamplified instrument directly in its Input (5) just by setting in the right way the Input volume. This is very important also for general connections of the machine in any situation like an Fx loop, a mixing console as described in the next chapter.

The “Old Italian Echo” were used as the main effect unit connected to the PA and were used by all the instruments of the band, but there are many famous artist who have used it in many ways, like Richard Wright with Keyboards, to Roger Waters on Bass, or John Bonham on a drum recording!

The New Echosex 2° T7E with its unlimited possibility can surely fit your needs both in live or recording applications

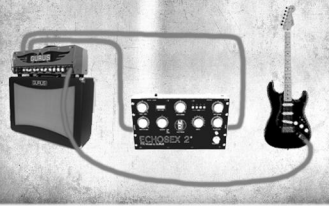
Connections

In Front Amp..



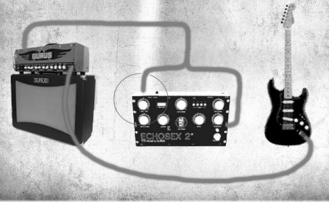
- The Echosex 2° T7E is designed to be used even in front of an amplifier, its tube buffered out perfectly fit any guitar, bass, or organ amplifier. The most important thing is to set the Input Level, to fit the High impedance signal of your guitar or bass. In this configuration, our suggestion is to put the Echosex at the end of your chain, or at least after OD/Dist. pedals, to obtain the best performances.

In a series Fx loop..



- Connect your Echosex 2° T7E to the Fx Loop of your amplifier it's very simple, use two mono jack cables, input to send, Main output to return. Very Important is to set in the right way the input Level, as the level of your preamp output (send) is very higher than a guitar signal, so you will have to set the Input control at a lower value. Help yourself with the Magic Eye to see when it's ok. Running into a loop, let you add beautiful, lush carpets of sound both to your clean or Lead sounds.

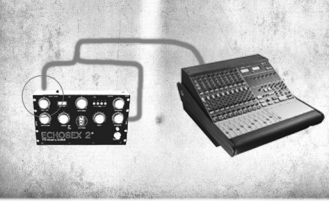
In a Parallel Fx loop..



- If your amp is provided of a Parallel Fx Loop, you can take advantage of the DI Wet out, to connect the Echosex 2° T7E in the best way possible in terms of quality and purity of sound, cause in a parallel loop, the 50% of your Guitar signal passes thru the external effect, while the other 50% goes straight into the output section of your amp. This will keep the guitar signal's dynamic completely intact, and will add the awesomeness of Echosex to your guitar tone. Take care again of the Input level for the same matter as before

NOTE: to engage the DI OUT you must set the Out Selector switch (9) in UP position. This will exclude the Main out and enable the DI Wet Out.

In a Mixing Console..



- This is one of the most rewarded and awesome way to use an Echosex 2° T7E, cause by applying it on a Mixing console's Channel, in the Wet Mode, you can add the magic con Echosex to any kind of instrument, as many Engineers did in the past with the "Old Italian Echo"...
- Remember to set the Input level and enable the DI WET out by the Out Selector (9) Switch.
- You can use a "Y" insert cable with Dual mono connectors for apply the Echosex to a single channel of your Mixing console
- Or you can connect it as a General outboard effect, using a TRS cable to connect to the DI wet Out, and a normal TS Jack for input connection.

The Magic unveiled

The old Italian made Echo unit T7E model, was the most famous of the many models produced by the Italian Binson company during the 50' & '60s and the one most used by Pink Floyd for their first 10 albums. Also used by many other artists and instrumentalist like The Shadows, Richard Wright and Roger Waters, and John Bonham of Led Zeppelin! Today, the "Old Italian Echo" has a little niche of the market made by old serviced units. But it's very difficult to find one in good condition or that has been well serviced, this is caused by the lack of N.O.S. original parts, and by the difficulties of setting it up, You need to be very experienced to be able to service it and set it up. Because you need set almost everything by internal trimmers that let the service technicians have access to a large number of parameters, it is very difficult work. The unreliability of the "Old Italian Echo" made it famous. As a mechanical unit it was subject to massive amounts of wearing out of mechanical parts, heads, that need to be correctly set up and precisely positioned to revive its magic and it needed to be cleaned often and set up every 2-3 gigs.. Gilmour himself said he's one of the two persons in the world able to repair and set up an "Old Italian Echo" before a gig. We actually don't know who was the other dude..

You can easily find information about the "Old Italian Echo" everywhere online and many reviews explain how great it was... magical, ethereal, lush repeats carpets, unbelievable tridimensional sound, and so on.. but nobody tells you WHY it was so different, and why it is so famous today... I'm gonna explain it.

The main reason for its BIG differences compared to a modern digital delay, is hidden in its own construction, what we call the "Binson System" that is made of the magnetic wire around the spinning drum, the 4 heads, the preamp, and a complex number of filters.

I will try to explain how it works.

When you play a note, the first (writing) head writes it on the magnetic wire. The spinning drum sends it to the first (Playback) Head, that sends it to output, passing thru the "BS" Binson system, that treats it, and does many things: Apply filters, degrade it, let it fade out, and then resends it to the writing head depending on how the feedback control is settled.

This actually works as a kind of loop, where the played note travels across the 4 heads, and the "BS", and comes back to the first one based on the feedback control.

Here is an example: If you want a note to be repeated 8 times with a delay of around 350ms, you just set the position 4 on the Heads selector (the single farthesthead) and set the feedback control to resend the repeat to the writing head for a number of 8 times.

Now that's the clever part: The first note will reach the farthest head in 350ms, and then will repeated for 8 times, degrading, fading out, and creating that typical, beautiful carpet of sound. But what happens if you play another note? It will become the new protagonist, cause while the 8 repeats of the first note played are going down, i've just wrote a new note on the magnetic drum, that is now treated and repeated for other 8 times.

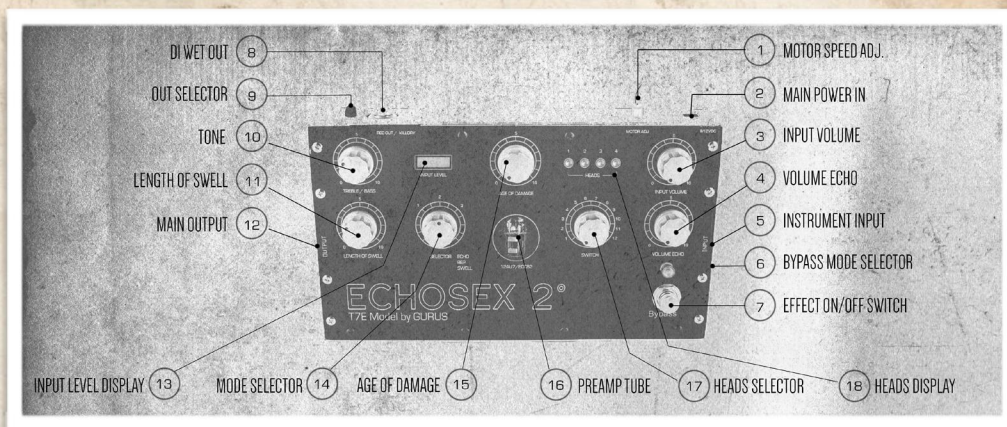
So, for example, if the first note was a wrong note, I can fix it, my mistake will stand at least for 350ms, then will die, being replaced by the new protagonist note I just played.

And the coolest thing is that if 350ms was not perfectly synchronized with the song, or with the drummer, I can keep the right time, you will hear the right note I play in sync, and a degrading, modulated, a beautiful and musical wall of sound fading out behind it.

But now what happens with Digital delays is simple. If I play the wrong note, it will repeat the mistake 8 incorrect times, and nothing else. A DSP could be programmed to emulate this in some way, but the fact is that common delays don't do that, and this was the best part of old tape units. They were so Magically Musical! That's what I always say to the few musicians that ask me to put a tap tempo into our pedals, it would completely kill the magic!! but maybe they never played thru an original "old Italian Echo".



Controls:



- 1) Change the overall delay time from Standard Binson's time up to 740ms. keeping the head's combinations in sync.
- 2) Main Power, use a 5,5mm x 2,1mm DC plug 9 or 12VDC - with 500mA available suggested.
- 3) Set Input Volume to better fit any input signal, checking the input display.
- 4) Set the Volume of Echo (Mix)
- 5) Standard 1/4" TS Jack input
- 6) The switch let you choose between immediate bypass or slow bypass.
- 7) Main effect footswitch (Bypass ON/OFF)
- 8) Sim. Balanced/UnBalanced DI WET Out, 1/4" TRS Jack (100% WET) to use for connection to mixing consoles
- 9) Engage the selected OUTPUT: UP= Rec out, DOWN= Normal out.
- 10) Tone of Repeats, it affect only the repeats, getting darker or brighter
- 11) Feedback, from 1 single repeat, to infinite and oscillating.
- 12) Standard 1/4" TS Jack Output
- 13) Shows the input signal, set input level to make it pulse, and not stay lighten
- 14) Three mode are: Echo (1 single rep. by selected heads, no feedback) Rep (Standard Echo mode with combinations of head and feedback available) Swell (reverberation)
- 15) Simulate the status of wearing out of the machine
- 16) 12AU7/Ecc82 Preamp Tube
- 17) 12 Position switch to select multiple heads combination as shown on heads display.
- 18) 4 leads shows wich head/heads combination is working.

Time settings:

The "Old Italian Echo" had fixed heads so fixed delay times that you can recall by a 12 position switch that combines heads in different ways, but in a very smart and musical way. As mentioned before, if a head is considered as a 8th note, the previous head can be added as a dotted eight, as the distance is proportional and chose for this reason. So the first two heads, can work in combinations to let you have beautiful presets for Slapback Echo, with all the nuances that perfect fits the short delay time, and the 3rd and 4th heads, are perfect for "long" delay time, so arpeggios, or rhythmic patterns. The 4 LEDs on the faceplate, positioned above the switch, let you see which Head/Heads are working. The Motor Speed Adjust on the rear panel, let you increase the overall delay, keeping all the heads combinations in sync. reaching very long delay times up to 740ms. and with reasonable THD distortion that always keeps lower than 1%.



Combinations Matrix:

HEADS COMBINATIONS	HEAD 1	HEAD 2	HEAD 3	HEAD 4
POS. 1	87 - 160ms			
POS. 2		174 - 360ms		
POS. 3			260 - 545ms	
POS. 4				348 - 740ms.*
POS. 5				
POS. 6				
POS. 7				
POS. 8				
POS. 9				
POS. 10				
POS. 11				
POS. 12				

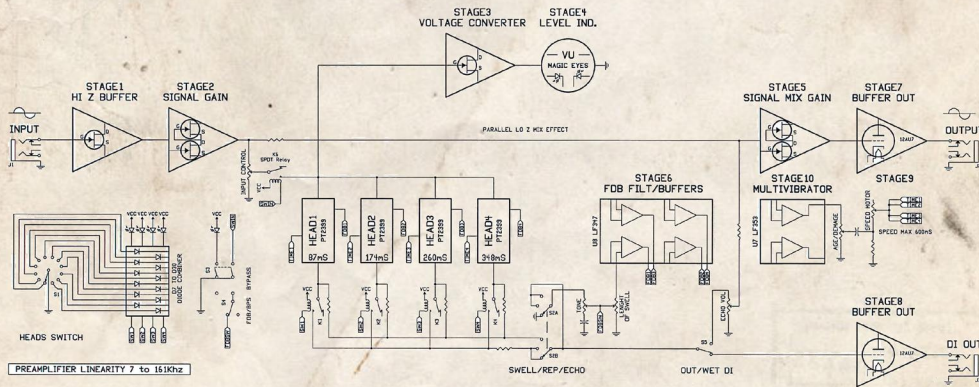
348 - 740ms.*

* Each singles Heads have a min. - max. value, depending on the Motor Speed Adj. control (1). 348ms. with the Motor Adj. completely closed, and it is very precise as it is settled by ultra low tolerance resistors. The Higher the value of Speed adj, the higher is the tolerances and average THD, so the max time can variate of a 5% max. But this also means that the "keeping in sync" of Heads combinations will be very precise, only the max delay time can be subject to slight variations.

Tech Specs

Power In	9 to 12VDC (negative TIP)
Consumption at 9Vdc	Min 300mA Max 400mA
Consumption at 12Vdc	Min 400mA Max 500mA
Input Sensitivity	1Vpp Max
Input Impedance	<1M Ohm
Output Impedance	< 47K Ohm (Unbalanced)
DI OUT Impedance	< 47K Ohm (Sim. Balanced)
Preamp Linearity Response	7Hz. to 161Khz. @1db
S/N ratio Preamp	<90db
S/N ratio Heads	-90dbV
Effect Mix Level	Max. 50%
WET DI Out Mix	100% WET
Heads preset times	(H1 87ms)(H2 174ms)(H3 260ms)(H4 348ms)
Adj Motor speed control	max 740ms
Heads Distortion	max 1%THD
Tone Freq.	Roll Off Filter 1Khz. @6db/oct.
BYP switch	Reed Relays for (stop/spillover option)
Output Tube Buffer	12AU7B (Balanced Triode)
Output Tube Buffer Efficiency	>95%
Estimated tube Life	Up to 6000Hrs.
Larghezza (Width)	220mm. (8,6")
Lunghezza (Lenght)	130mm. (5,1")
Altezza (Height)	50mm. (2")
Peso (Weight)	0,7Kg. (1,5lbs)

Block Diagram



Gurus' Advices:

There are few things you should take care before to start creating music, so let's see it together_

- Connect your guitar into the Main Input socket (5)
- Now, you have to set the Input Volume, this is a very important step, as the T7E can accept different signals it's very important to set it in the right way.
- Turn the Input Volume Knob clockwise and check the Input Level Display (13). When it stay completely lighten up, without pulsing, it means the level is too high.
- The proper setting is when the display pulses following your playing dynamic.

Set a proper input level means to have the best performances in any situation, like in front of an amp, in the pedalboard, or in an Fx Loop that have a bigger signal, or connected to mixing console.

Remember that the Input Level works in strictly connection with the Mix control (4), so the higher is the input level, the lower would be the mix level. Just to make an example, if you would have a close level between clean note and repeat, you should set an high mix level.

Now, let's talk about the Echo, you have may possibilities to bring out his magic voice, but first, some other steps:

- Choose by the Bypass Mode Switch (6) if you want it to immediately stop the delay by pushing the Bypass button (7), or leave the trails to fade out..
- Choose the Echo Mode by the 3 position Mode Selector (14) for three different working mode:
 - Echo = Classic 50's slapback echo made of 1 single repeat from the selected heads (no feedback)
 - Rep = Repeats: Standard Echo mode with selectable head's combinations and feedback engaged.
 - Swell = A kind of beautiful Reverb effect made using all the four Heads.

Now you can select for example in the Repeat mode, the combination of Heads that you prefer, and see it by the Heads Display (18). Just for example, a combination like position 5 from the Switch ((17) that couples the heads 4+3, it will mean the 4th Head considered as an 8th note, and 3rd Head is equal to a dotted 8th. And even if you stretch up time by the Motor speed adj, (1) you won't loose this Sync.

- Use Feedback Control (11) to create beautiful, lushy, tridimensional carpets of sound, and check the tone control (10), they are strictly connected, A closed tone can brake the oscillation, and let you stay at the edge of oscillation to have that beautiful carpet degrading the repeats in a very unique way, or, an opened Tone, give you that crispy and brilliant repeats that goes brighter and brighter depending on the feedback setting, so be care on how long it is, to avoid undesired crazy wall of noise! (Note: the Tone affect only the repeats, it is not a general EQ control of the machine. The less is the feedback setting, the subtler is the tone effect.)
- With the "Age of Damage" control (15) you can simulate the wearing out of your unit, as mentioned above in the introduction chapter, it means you will have a beautiful kind of modulation 'til Noon, and a random pitch shifting effect from 1:00 to max... Just choose how much sexy you want your unit!!

Again, thank you for purchasing, be in touch with Gurus Amps on our channels, and use this machine for make kickass music!!

Gurus Amps.