SPEAKER EMULATOR IItm

Operating Manual

The Concept....

The Groove Tubes Speaker Emulator II provides your tube amp with an emulated speaker load. This load has a dynamic and reactive complex impedance which can be connected to your amp's output stage instead of, or in addition to, your guitar speaker. The Speaker Emulator II acts just like a real guitar speaker as far as your guitar amp is concerned, and you need no other speaker load to operate your amp safely. The Speaker Emulator II then converts the high level of energy from your amps power stage to a preamp level signal that sounds, feels and *records* just like a big tube amp cranked up, because that's exactly what it is!

The output signal from the Speaker Emulator II can be used for several different applications. It's output signal can be sent through an effects loop then returned to a "monitor" amp which can be adjusted to the appropriate stage volume level. Crank up the guitar amp to get the tone your after, then turn down the volume of the monitor amp for the Holiday Inn gig level you need. Your ***distortion*** level will depend on how hard you drive your guitar amp into the SE, but your ***volume*** is determined by the output level of the SE or the monitor amp in use. You get true power tube distortion BEFORE the effects are added, just like in the recording studio. More important for studio users, the Speaker Emulator II signal can directly feed the mixing console of a recording studio, or of a live sound reinforcement system. This saves time and produces a consistently great sounding guitar sound for the live engineer, while providing another dimension of "direct feel" that can't be duplicated by just using a microphone on the normal speaker cabinet during the recording session. Musicians with home studios can record great sounding guitar tracks late at night and not wake the neighbors. The possibilities are endless.

A Little Background Info...

Sounds simple, but it was a real effort and took years of research to finally get the product right. We enlisted some of the world's leading speaker engineers and audio mathematicians to form the research team that developed the product you are about to use. Our new research led to development of the "perfect reactive load" that produced the correct type of negative feedback to the tube amp, which is critical to achieve real tube distortion and give players the "touch" they're used to. The SE II load closely emulates the loading properties of an early Celestion speaker like the ones used in the classic Vox and Marshall amps of the early 60's. We chose this speaker to emulate since it has the highest inductance (and the lowest efficiency) and thereby creates a maximum of the negative feedback that contributes to the distortion produced by the tube output stage of your amp. If we were going to emulate a speaker, why not emulate the best sounding and most reactive one we could find.

The exact specifications of our load circuit are of course kept secret, the concept and approach behind the circuit design was so innovative, our research team was granted a United States Utility Patent (#4,937,874) for this important work. Today, years after we introduced the first Speaker Emulator for sale, several major amplifier manufacturers, most notably Marshall Amplification, have taken out licenses on this basic patent from us and produce their own versions of the device. Make no mistake, each of these versions sound and work differently, but are all based on the simple idea to provide a reactive load device in order to convert the

power amps output into a preamp level signal. Remember that speakers do not all sound alike, yet operate on the same basic principle. You are about to enjoy what we think is the best sounding Speaker Emulator, and of course, this *is* the original article.

Our Speaker Emulator II is straightforward and easy to operate, and has been developed with the vintage or classic player in mind. Our system concept of using your favorite guitar amp to drive the Speaker Emulator in order to produce realistic sounding preamp signal may be new to you, don't feel alone. This modest but sincere owners manual will hopefully instruct you to get the most out of your original Groove Tubes SE II, and get great guitar tones for any production situation you need.

The Hook Up...

The Input - Connect the speaker output of your amp directly to the input labeled "amp input - from amp" with a good quality, heavy duty speaker cable. Do not use guitar cords, you will lose tone and possibly damage your amp. The Speaker Emulator provides all the load necessary for your amp, but you can leave your usual speakers connected in addition to the Speaker Emulator. The SE will continue to function as a protective load even when it is switched off or disconnected from the AC supply.

The Impedance...

Your amp will most likely have an optimum operating output impedance somewhere between 4 and 16 ohms. Our Speaker Emulator provides a load of around 16 ohms. If your amp has a selectable impedance switch, best results are achieved at the 16 ohm setting. However if your amp does not have a selectable impedance, don't worry, it will work just fine. Always remember never to load your amp with an impedance LOWER than it's designed for. For example, if your amp is Fender Twin which is designed to produce optimum performance into a 4 ohm load, a load of 2 ohms could be damaging. However a load of 8 or 16 ohms will result in a loss of optimum power output, but will not harm the output stage. We've found that the best results for a speaker emulator load device is around 16 ohms, so that's where we've set our impedance on the Speaker Emulator.

The SE-II will accommodate amps with power ratings of up to 100 watts including most Marshall 100 amps that commonly exceed their power rating by 20%, depending on the amp's vintage. The SE-II will work with 99% of the guitar amps on the market, the most notable *exceptions* being the Ampeg SVT (300 watts) and the Marshall Major (200 watts).

The Speaker Return...

This new feature added to the SE-II allows the player to both record and play live at reduced volume levels. The SE-II is a constant reactive load that absorbs roughly 1/2 your amp's energy when used in conjunction with your normal guitar speaker. The "Speaker Return - to the Speaker" jack returns a 50% reduced power level back to your normal speaker. Throw the power selector switch and it's further reduced to a 25% power return. This allows for great sounding power amp distortion at relatively low volume levels...perfect for live club recording or just normal gigs.

The Speaker Emulator outputs...

The output jacks labeled "Speaker Emulator Outputs" have a line level preamp signal level and can be connected directly to a mixing console, another guitar amp, a stage monitor system or any combination of the three. The signal present at these output jacks is the "dry" signal of your amp's total sound as it entered the SE II, not to be confused with the "Mixed Outputs" (explained later). Always use good quality shielded guitar cable, never use a speaker cable for this use. When connecting the SE output to the input of a normal guitar amp, remember it's a hot line level signal that will overload most guitar input stages. Therefore, you must use the second input of the guitar amp which usually has a -10db sensitivity and will produce the

best results by avoiding unpleasant sounding preamp overload distortion. If your guitar amp has a normal effects loop, a better method to input the SE II line level signal would be the "return" jack of the effects loop. Two SE II output jacks are provided for multiple signal processing, when necessary. For instance, one output to the P.A. or recording system (instead of a mic on the stage speaker!) and send another to your stage monitor system.

The Parallel Effects Loop and Mixed Outputs....
This is another new addition to the SE-II, and provides great signal processing for live stage work, while not sacrificing it's ability to record a dry signal simultaneously elsewhere. It improves the way your effects sound by inserting them in a parallel signal chain which can be mixed with the original dry signal from the SE-II circuitry, just like signals are processed in a studio mixing console.

Insert your effect(s) in the jacks labeled "SEND" and "RETURN" located on the rear panel. Next, set the SE-II operational parameters first (explained later in "The Operation"), then set the "Loop Send" level control located on the front panel to the maximum without overloading the input of your effects device(s).

Best results are found by setting the effect device at it's "wettest" setting and the effects mix level to the full effect position. In this way the effect signal contributes less to the balance between the original signal, and the effected signal. In other words, more of your real tube tone from the SE II preamp stays intact.

The "Loop Mix" control adjusts the balance between your "dry" SE II signal (the dryest signal is # 1) and the "wettest" effect signal is #10. Again, best results are found by keeping the mix as much in favor of the dry side, or as close to 0 as possible. Return the signal to your monitor amp system, or the P.A., or the recorder to get the combined signals of the SE-II and the effect device(s). I think you will be amazed at how much better your existing effects will sound when inserted and mixed in this parallel loop circuitry.

The Operation...

The Input and Output level controls...
Generally speaking, best results will be achieved by keeping the Input level at the lowest setting, while using the Output level at the highest setting. This position minimizes possibility of distorting the input filter stage of the SE II, while maximizing the signal to noise ratio of the output signal. The input level controls the signal strength as it is sent on to the EQ section of the SE II, and after the signal is tapped off the inductive load section, or first stage of the SE. If your guitar amp is fairly powerful, such as a 100 watt Marshall, the signal after the load section could be so strong as to clip, or distort the EQ section. This will sound unlike normal smooth tube distortion, but rather like a buzzing distortion. Lowering the input level will eliminate this buzzing distortion. If you are using the amp at a lower volume level for cleaner passages, then you can turn up the input level to compensate for the overall volume loss you will experience as you turn your amp lower. Also, if you are using the SE with very low power amps like a Fender Champ (about 7 watts), then turn *up* the Input level as far as possible before that buzzing type distortion which occurs when the EQ stage is overpowered. Leave the output level as high as possible at all times for best tone and maximum signal to noise ratio.

FENDER TWIN REVERB, NON-MASTER VOLUME:
Input Level: 3
Output Level: 9-10
EQ: IN (for full range speaker system or recording)
OUT (for return of signal to a typical guitar amp/speaker system)
220Hz: 3-4
1700Hz: 2-3
3500: 6-7
NOTE: Best results with Master Volume amps, turn the Master control at least 3/4 to full up to allow for more power tube distortion and less preamp stage distortion.

A final word of advice....

The Speaker Emulator will produce a sound that will be slightly different thru your full range monitor system than the sound and feel you may be used to when you are playing normally through your usual guitar speakers at higher sound levels. This is partly because normal volume levels of your guitar speakers will probably be much higher than those of a studio or stage full range monitor. Additionally, guitar cabinets are either open back or sealed system designs and have a different feel from the delicately tuned ported designs used in full range speaker systems. In other words, the sound of a 100 watt Marshall pumping through a couple 4x12 Celestion cabs 2 feet from your backside will likely be more esthetically satisfying than what your going to hear and feel from a small full range monitor placed above your head, or at your feet.

Relax, this is a normal response. Remember the end product of your sound through the P.A. system or the playback as it is mixed from the tape will be far better than anything you've been able to get before using the Speaker Emulator. The improvement in your tone by using your guitar effects placed *after* the power amps's distortion will amaze you. Additionally, the improved separation of the guitar as it is isolated and mixed back into the complete band's sound will allow for perfect balance in either lead or rhythm passages, and you amp won't bleed into every other mic on stage! Your engineer will love you, and your audience will hear every note at just the right level, from any seat in the house, not just in the front row. When playing this way live, it will take you a little time to adjust to the new way you will monitor your performance, it's just different than what you're used to. In the studio, it will give you an added dimension to either replace or supplement your present recording techniques. Be patient, once you adjust, you won't ever want to play live or record any other way.

GT ELECTRONICS WARRANTY

Your GT Electronics product is warranted to be free from defects in materials and/or workmanship for a period of one year from the date of purchase. If you experience any faults in this product, you may either contact your original dealer or feel free to directly contact our service department at the address or phone number listed below, and we will advise you on how to proceed with warranty repair procedure.

If you have any further question, please contact us at.....

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