

Nemesis Owners Manual



NA650 Bass Guitar Amplifier

EDEN
THE LEADER IN BASS AMPLIFICATION.

Bass Guitar Amplifier

NEMESIS NA-650

OPERATION MANUAL

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FOREWORD

Congratulations on the purchase of your new Nemesis NA650 Integrated Amplifier System. All of us at Eden are totally committed to providing you with the very best bass guitar systems in their class. Our goals are to offer you the outstanding performance quality of a top-notch, professional bass amplification system at a reasonable price point, and to make Nemesis amplifiers the most musical and reliable Bass amplifiers available.

This manual will cover domestic and international versions of the NA650 Integrated Amplifier.

The NA650 delivers 275 watts RMS output @ 8 Ohms, 440 watts @ 4 Ohms and 650 watts @ 2 Ohms, all with +3dB of headroom. This amplifier also features a thermostatically controlled, active cooling system with built-in thermal safeties.

You have purchased what we feel is one of the finest bass amplifiers in its class. The pre-amplifier section, with its familiar Eden Enhance control and powerful semi-parametric tone control system is coupled to a gentle auto-compression circuit, allowing you to achieve a wide array of sounds. This compact, rack mountable package houses modular circuits made with superior components and designed for years of trouble-free service.

The Nemesis products group is the result of our quest for ultimate bass tone and maximum reliability. Your amplifier was designed, engineered and manufactured equivalent to aircraft vibration standards and housed in a welded steel chassis with steel top to ensure maximum reliability. The modular design allows quick repair in the field should such a need arise.

The Nemesis line of amplifiers is the result of our research and development in combining high performance and compact size. Just as a skilled craftsman needs good quality tools that won't let him down on the job, so does a good musician. We hope you enjoy the tool we've created for you. Have fun; play low!

Please read this manual in its entirety before operating your new amplifier. Failure to do so could result in misuse or damage. We've taken the time to write it, which was a lot longer than the time it will take for you to read it. Help us help you by taking a few moments to learn how to properly use your new amp. You'll be glad you did!

Please complete for your records:

Date of Purchase: _____

Model: _____

Serial Number: _____

Dealer: _____

CAUTION!

Your ears are your most important piece of equipment. Unfortunately, they cannot be replaced as easily as your other gear. Please take the following warning seriously.

This product, when used in combination with loudspeakers and/or additional amplification may be capable of producing sound levels that could cause permanent hearing loss. DO NOT operate at high volume levels or at a level that is uncomfortable. If you experience any discomfort or ringing in the ears or suspect hearing loss, you should consult an audiologist.

Thank you for your purchase of an Eden bass guitar product. This unit has been designed and constructed to give you years of trouble-free service.

Please take the time to review this manual and to send in your warranty registration card.

FRONT PANEL FEATURES

Input Jack – Designed to accept a standard ¼ inch mono phone plug. For best results use a high quality shielded cable to connect your instrument to the amplifier. The input is buffered and will handle standard passive, high level active, and piezo input signals.

Gain Control – Regulates the first gain stage of the preamplifier and controls the amount of signal available to the system.

Set Level Indicator – This light helps the user set the appropriate amount of gain. When set properly, the indicator should light on your loudest/lowest notes. We'll go over this in more detail later in the manual.

Compressor Bypass Switch – This switch allows you to bypass the front end Compressor/Limiter. The Compressor/Limiter in your unit is a fixed threshold type. You adjust the Compression level by turning the gain control up or down until you get the amount of compression you want. You may find the bypass switch useful for getting that maximum punch when you are slapping or popping hard.

Gain Boost Switch – Depressing this switch engages a +10dB boost. This feature is useful for basses that have a low signal level. The light is on in the High gain position.

Edge Control – Allows you to dial in as much or as little vintage tube style distortion as you like. The control produces a warm single-sided, even order harmonic distortion that sounds just like the old tube heads. With the control turned fully counter-clockwise, the circuit is bypassed. The farther to the right you turn the control the more distortion you will get. The distortion is fairly subtle at low input levels and is more pronounced at high gain settings.

Enhance Control – Called the “Magic Knob” by some, this complex control simultaneously boosts the very low bass, upper middle, and high frequencies while putting a dip in the lower middle frequencies. It is flat when set to its minimum level (fully counterclockwise).

Mute to Tune – When this switch is engaged it mutes both the stage sound and the D.I. send. Only the tuner output stays hot. The Mute is on or muted when the LED is on.

Semi-Parametric Equalizer – Allows you to dial in a specific frequency to enhance or cut. This feature is especially useful for upright and acoustic bass guitars that have a resonant frequency. Because we've included a bypass switch, you can also use it to create a second tone that is available instantaneously. (You're welcome.) The frequency is adjustable from 40Hz to 10KHz. The level can be adjusted +/- 15 dB. The control is FLAT when the level control is at 12:00 position (straight up).

Three Band Tone Controls – Divides the audio spectrum into three bands: Bass, Mid, and Treble. The Bass and Treble controls are shelving type filters. The Mid control is a band pass type filter. These controls give you a broad general control of the tone shaping.

D.I. Selector – Allows the user to choose to send the D.I. either pre-EQ or post-EQ.

D.I. Level – Controls the level being sent from the XLR balanced output jack. We suggest setting the control at approximately 12 o'clock initially. If the signal to the board is too hot, it's better to engage the Input Pad on your channel of the board than to turn it down here, if at all possible. In general, it's better (in terms of signal-to-noise ratio and dynamic presentation) to send as hot a signal as possible to the board. However, you can adjust the signal level, if necessary, so make sure your soundperson or recording engineer is aware of this capability.

Master Volume – Controls the main stage sound level and the Head Phone outputs.

Headphone Jack – Accepts a standard ¼ inch stereo or mono headphone plug. It can also be used as a Master Output send to slave another amplifier.

DC Indicator – When lit, shows that the low voltage power supplies are operating.

Mains On/Off Switch – This switch turns the system power ON or OFF. The switch illuminates to indicate the presence of AC power present in the chassis. This switch is prior to the fuse. The light in the switch may flicker depending on local voltage conditions. This is normal and nothing to be concerned about.

NOTE: The Mains Switch will illuminate even if the fuse is blown. However, the DC Indicators will not illuminate if the fuse is blown.

IMPORTANT NOTE: When attached, the included lighted footswitch will defeat the Front Panel controls for the Mute to Tune and Enhance Bypass functions.

BACK PANEL FEATURES

Amplifier Power Rating:

RMS output (with +3 dB headroom):

275 Watts @ 8 Ohms

440 Watts @ 4 Ohms

650 Watts @ 2 Ohms

Cooling System – Your amplifier features a thermostatically controlled fan, which will switch on when the internal temperature reaches 130 degrees F. In low volume situations (into 8 Ohm loads) the fan may not come on at all.

The cooling system also features a high temperature thermal safety system, which will activate a circuit if the operating temperature goes above 200 degrees F. This circuit will automatically turn off the output of the system in the event of overheating. It will automatically reset itself as soon as the unit cools down to a safe operating temperature.

NOTE: the D.I. will continue to operate normally even when the amplifier is in thermal safety mode. Only the stage sound will be lost.

IMPORTANT NOTE: Excessive heat is a Very Bad Thing and can result in severe damage to your amplifier. DO NOT bypass or disconnect any part of your thermal safety system. Doing so will immediately void your warranty!

Combination Power Cord Jack and Fuse Holder – The removable power cord is attached here. To access the fuse holder, pull the holder out of the top of the power receptacle. Your unit was shipped with a spare fuse inserted in the fuse carrier. **USE ONLY THE SAME SIZE AND TYPE FOR REPLACEMENT. Using a fuse with a different rating than specified is a VERY BAD THING and can cause damage to your amplifier.** All models come with a holder marked (FUSE) or (115/230) and are factory configured for 100/120/ 230/240 only and must be adapted by a service tech for any voltage change.

Fuse Requirements:

USA @ 120 Volts /60 HZ – 6 Amps, 5 x 20 mm GMC/T/slow blow
Europe @ 240 Volts/50 Hz - 3 Amps, 5 x 20 mm GMC/T/slow blow
Japan @ 100 Volts/60 Hz - 7 Amps, 5 x 20 mm GMC/T/slow blow

IMPORTANT NOTE: Always use slow blow or time delay type fuses. Do not use fast blow fuses.

To convert your amplifier from US to European fusing, remove the Fuse Holder and insert a 3 Amp slow blow fuse. Flip the fuse holder over and reinsert.

IMPORTANT NOTE: In order to operate properly in other parts of the world, your amplifier may require minor modifications. These modifications must be made by a QUALIFIED technician. Contact your local distributor for further information.

Speaker Outputs – These consist of two ¼ inch jacks and two NL-4 connector (sometimes called a Speakon). The jacks are wired in parallel. The total speaker load impedance should not go below 2 ohms. On NL-4 connectors, we use +1, -1 connections.

Ground Lift Switch – This switch lifts the ground within the balanced output system to allow you to eliminate excessive noise/ground loops when connected to external systems.

Recording Out (D.I.) – This fully balanced XLR output allows you to send a pre- or post-EQ signal to a recording or sound reinforcement mixing console. We use Pin 2 hot configuration. Adjusting the Master Volume control will not affect this send. This output is designed to use with phantom powered systems. However, it never hurts to turn off the phantom power at the board, if possible.

Mono Pre-EQ Effects Send/Return – These standard ¼ inch jacks allow you to send and receive your signal to and from external devices. This effects loop is positioned post (behind) the compressor and before the Enhance control and the tone section. This loop is at line level; do not use instrument level effects in this loop as they tend to be overloaded by the higher signal level which can cause distortion.

Tuner Out Jack – This standard ¼ inch jack is designed to provide a pre-gain signal for connection to a tuner. It can also be used to provide pre-tone signal to other devices such as a direct box or console. The signal is enough to provide adequate signal to virtually every tuner on the market.

OPERATING INSTRUCTIONS

Mechanical and Thermal Issues – During operation, your amplifier should always be placed away from sources of moisture or heat. Care should be taken not to obstruct the ventilation holes on the bottom and sides of the unit. In the event of thermal shutdown, you should eliminate the cause of the thermal problem (poor ventilation, speaker loads lower than 2 ohms) immediately. The supplied rack ears can be used to install your amplifier in a conventional equipment rack for protection during transportation.

Electrical Connection – The NA650 requires at least 10 Amps of correctly wired alternating current for proper operation. Providing less than 10 Amps of power may result in poor amplifier performance, so it's probably not a good idea to plug all of your band's gear into a single wall outlet.

Connections – All instrument-level input connections (everything but the speakers) should be made with high quality shielded cables. The use of speaker cables for input connections will result in excess noise. Speaker connections should be made with high quality 16 gauge or heavier unshielded speaker cables. We recommend 10 or 12 gauge cables. **The use of shielded line or instrument cables for speaker connections can damage your amplifier.** The speaker cable should be as short as possible.

INITIAL SET UP

As bassists, each of us has in our head a concept of our perfect sound. Eden amplifiers are designed to help you easily achieve the sound you hear inside you. However, it's a multi-step process as explained below.

In order to ensure the ultimate in tone, it's important to follow the procedure outlined below. Don't skip steps; don't jump around. Yes, this may take a minute or two, but the work is well worth it. Once they've done it a few times, most users can do it time and again in about a minute.

IMPORTANT NOTE: Before you plug in your unit for the first time, please do the following things. First, turn the power switch to the OFF position. Check the back of your unit for the correct voltage notation for your county of operation.

Once you've ensured correct voltage, set the Master Volume control to minimum (fully counter-clockwise). Set the tone controls to the center position (12:00 or 0). Turn the Enhance control to the minimum position. Set the Input Gain control to the minimum (fully counter-clockwise). Set the Compressor to the OFF position (push the switch IN). This will set your amplifier up flat and with the Compressor disengaged. Next, plug in the power cord to the AC inlet on the back of the unit. Use only a safe grounded receptacle for proper operation at the correct voltage for your country. Double check to make certain your amplifier is set for the correct voltage in your country. Double check that all connections and switches are correct for your chosen mode of operation.

Turn On – Once you’ve completed the steps above, you can plug in your bass and turn on the unit (plug it in first, ok?) and let’s get started. We recommend turning your system on with the Master Volume control set to its minimum position. This will prevent any unexpected signal from being sent to your speakers.

Setting Your Level – Remember, begin with the Input Gain, Enhance, Compressor and Master Volume completely OFF – fully counter-clockwise. All EQ should be set flat, that is, at 12:00 – straight up.

While playing your lowest note (or loudest), slowly turn the Input Gain up until the Set Level light begins to blink with regularity. If you go past 2 or 3 o’clock, you may engage the Gain Switch to better match the gain of your instrument to the amplifier.

If you have disengaged the Compressor as we suggested, the Set Level light will barely blink on your loudest notes when you reach clipping in the Input stage. We recommend you decrease gain one or two clicks to ensure there is no clipping in the system. By the way, this is David’s favorite way to set level, even if you intend to use compression.

Once you have properly set your Input Gain, turn the Master Volume up to a comfortable listening level and proceed with the rest of the setup process.

Setting the Compressor - If you want to use compression, engage it now by turning the Compressor Defeat switch OFF. The compressor light will now blink when your gain goes above the compression threshold. This will generally show up more on the lower notes, or when you employ Slapping. (A properly compressed Slap sound is very cool, indeed.) If you want more compression, increase the Input Gain a little at a time, until you achieve the amount of compression you desire.

SETTING YOUR EQ

The frequencies that you'll need to boost or cut are dependent upon your instrument, playing style, speaker cabinets, and venue. Extreme settings of boost or cut are unlikely to be necessary or helpful. We are frequently asked to provide suggested settings for various styles of play. We have discovered though, that most of our endorsers tend to set their EQ generally flat, using varying amounts of the Enhance Control to achieve their sound. In fact, a number of our recording artists tell us that their standard recording set-up is to have the Enhance set at approximately 9 or 10 O'clock and the tone controls set flat.

We encourage you to experiment with different settings to obtain the sound you desire. We have included some EQ panel diagrams at the back of this manual to help you record your settings.

Enhance – Once you've set your gain, you can move on to setting your EQ, beginning with the Enhance control, or Magic Knob, as some call it. The Enhance circuitry adds very low bass, upper mids and highs while scooping out a bit of low middle. The more Enhance effect you dial in, the greater the boost (and cut). As with all of our EQ controls, a little goes a long way.

Slowly bring the Enhance control up while playing. If you turn it up close to 12:00 on the dial and still don't have your sound, stop there. Return the Enhance to OFF or leave it at no more than 12:00 and work with the EQ section.

Using the EQ Controls – Before you begin to twiddle knobs, let's talk about a few things. Excessive boosting of one or more EQ frequencies may cause an overload in the EQ section. If this happens, the EQ Clip light will engage. This is a **Very Bad Thing** and needs to be corrected immediately. If EQ clipping occurs, you can either decrease the boost or decrease the Input Gain. Remember, too, that our EQ controls are active, and are meant to turn both ways – not just UP! This means that you can enhance a certain frequency spectrum either by boosting that frequency or by cutting the adjacent frequencies. This latter method has the advantage of maximizing potential headroom.

If possible, step well forward of your rig to get a better idea of how you will sound in the room. You may be surprised at how different you sound once you step away from the speakers.

NOTE: Many players rely on the Enhance Control (and perhaps a little Midrange Massage) to get their sound. This method leaves the Bass and Treble controls available to dial in to a particularly difficult room. Just something to keep in mind, ok?

Setting Bass Mid, and Treble – OK, now it's time to set the EQ, beginning with the Bass and Treble controls. These controls cover a fairly broad frequency spectrum and a little goes a long way. Adjust these controls up or down as needed. We suggest playing a few notes in various areas of the neck so you can hear what your adjustments have done across the fretboard.

Using the Semi-Parametric EQ Controls – Adjusting the Semi-Parametric control set allows you to focus in on particular frequencies to achieve your desired tone. We suggest you spend some time experimenting with these controls to learn more about how they can affect your sound. Here's an easy way to do that:

Begin with the frequency control fully counterclockwise. Turn the Level control to approximately 9:00. Now, while playing, rotate the frequency control to the right a little at a time. You should be able to easily hear the frequencies this first set of controls affects.

Now, cut the Level control to approximately 3:00 and do the same thing.

Here are a couple of tips to help you dial in your desired tone:

For a great fretless tone, dial in a little extra at approximately 550Hz.

For extra grind for Rock and other aggressive music, add a little at 1-1.2KHz or 2-2.2KHz – or both! Remember, though, that a little goes a long way. Don't over boost.

NOTE: Remember that the tone you get when playing alone may not cut through as well as you'd like when playing with others. You may need to adjust the tone controls to achieve the same (apparent) tone, especially in the mids and high end.

A FEW TECHNICAL THINGS TO REMEMBER

Clipping = Bad – Keep an eye on the EQ Clip light. If it blinks, either reduce Input Gain or cut back on one or more EQ ranges. As we said earlier, Clipping in the preamp section is a **Very Bad Thing** and is to be avoided at all times. If you find yourself running out of amplifier headroom, cut a little in the lower frequencies, which require the most power from your amp. You'll know this is happening if you see the Limit light flashing. As long as the light is just blinking, you're fine. But, if it's on more than it's off, you might want to back off a bit.

Frequency Oddities – Two areas are a frequent source of frustration for bassists trying to achieve their sound: frequency masking and frequency enhancement. Frequency masking occurs when other instruments (particularly cymbals and electric guitars) obscure the important upper harmonic content of your sound. As a result, you find that the EQ settings that were so perfect at home lack definition in a live setting. On the other hand, the stage settings that worked so well sound harsh and/or thin in the absence of other instruments.

Frequency enhancement results from cabinet placement and room acoustics. A cabinet placed on the floor will have the lower frequencies boosted by about 3 dB. Placement against a wall adds another 3 dB. A corner adds 3 dB more. Consequently you may find a surprising boominess to your sound. Certain qualities in the room itself can also enhance the lower frequencies, further contributing to this problem. Frequently this effect is more noticeable in the audience than it is on stage. Compensating for it may result in a stage sound that may seem a little thin. However the sound is actually quite full out in front.

NOTE; Remember, you can't equalize out major physical room anomalies. If things sound really weird where you are, try moving you rig a few feet and see if that helps. This may be particularly helpful on saggy stages that bounce like a drum head. (*The propellerhead term for this is "diaphragmatic."* So says David. – LB)

YOU'RE DONE. GO PLAY.

There you have it: a quick and easy process to help you get the perfect tone from your Nemesis amplifier. As previously mentioned, it may take a few extra minutes the first few times you go through this, especially if you take the time to experiment with all the knobs and switches, which we highly recommend.

We are confident that the time you spend getting to know your new friend is an important investment, one that will pay off immeasurably in **Great Bass Tone**. And, after all, that's why you bought an Eden, right?

OTHER CONSIDERATIONS

Suggested Speaker Systems – Your speaker system should be chosen to accommodate the characteristics of your amplifier and your predominant application. If you will only be using one cabinet, a 4 Ohm model will draw the most current from your amplifier. If you will generally be using two cabinets, they should both be 8 Ohm models so their combined impedance will be 4 ohms. If you are uncertain about your future needs, always go with the 8 Ohm speaker option so that you can add another speaker later if you need to. In general, adding more speakers will give you a greater volume increase than adding a few more watts.

We have designed our amplifiers to operate safely at 2 Ohms only because everyone else is doing it and some users expect it. However, we much prefer operating at 8 or 4 Ohms because of the markedly improved quality of tone and dynamic response. But if you really want to, you can operate your NA650 at 2 Ohms without worry.

Headphone Jack as a Line Driver – On some occasions (such as high-volume or outdoor situations) it may be desirable to use the NA650 along with an additional power amplifier and added cabinets. A standard shielded instrument cable may be used to connect from the headphone jack of the unit to an unbalanced input of a standard power amplifier. This will provide a signal that is post-EQ and after the Master Volume control, allowing the entire system to be controlled from the NA650. This way, you only have to adjust one set of knobs. This is a **Really Neat Thing**, huh?

Using the NA650 Without Speakers -This amplifier is designed to be used safely with headphones only, without the loud speaker plugged in. No harm will result from using the amplifier in this fashion. This allows the use of the unit for practice with headphones and as a preamplifier with other amplifiers. Neighbors and room mates really love this, which qualifies it as another **Really Neat Thing**.

MAINTENANCE

Your Nemesis amplifier has been designed to require minimal routine maintenance. Attention to the following areas will ensure optimum performance of your amplifier. We're serious. Don't blow this off, OK?

Contact Point Cleaning – One of the weakest links in most bass amplification systems are the solderless connection points where instruments, speaker cabinets, effects, and other devices are connected to the amplifier. (The most vulnerable of these types of connection is the jack on your instrument). In addition to contamination from airborne pollutants, these points are frequently assaulted by connectors that have picked up debris from dirty stages, cases, etc.

This contamination can result in poor contact as well as poor tone, and we all know that bad tone is a **Very Bad Thing**. These points should be cleaned regularly with a cotton swab soaked in denatured alcohol or a commercially available de-oxidant. Frequent cleaning of the plugs on your cords is also recommended.

Dust Removal – You should periodically inspect the ventilation openings on the top and sides of the unit to ensure that they have not become blocked by accumulated dust. Vacuum the openings to remove any dust buildup. Dust bunnies are definitely not cool.

The Magic Smoke – Few people realize just how much magic goes into creating Great Bass Tone. It isn't something you normally need worry about. Just have fun and leave all that to us. However – *and this is very important* – if you ever release the Magic Smoke from your amplifier this is indeed a **Very Bad Thing**, perhaps the worst thing you can do. If you see any smoke (Magic or otherwise) coming out of your amplifier, immediately turn it off and seek the services of a qualified magician...uhm, we mean...technician. **DO NOT continue to use the amplifier in this condition.**

Learn More – If you'd like to learn more about your amplifier (or about our company and its activities), we invite you to visit our website – www.eden-electronics.com. There you'll find articles to help you better understand our products and the technical stuff some people find so interesting. You'll also find our FAQ (Frequently Asked Questions) file, which is updated regularly.

While you're there, check out our on-line forum. There you can meet hundreds of other Edenites who'll be glad to help you with any questions you may have about our gear. Not to brag too much, but we think our forum is a **Really Neat Thing**, filled with **Really Neat People**. We're pretty sure you'll think so, too.

Service – In the event of amplifier malfunction, or questions about your unit's operating features that aren't answered in this manual or on our website, you should contact your Dealer. Once you and your dealer have determined it's definitely a malfunction (and not an operator error) you must call our Customer Service Department and **obtain a Return Merchandise Authorization (RMA)**. We WILL NOT accept any gear sent without an RMA, so save the time and money by calling first, ok?

Please call the USM Customer Service Dept. at:

1-800-USSOUND (1-800-877-6863)

When you hear the voice prompt, Press 1 on your phone's keypad.

Please ship Authorized Returns for service to:

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Eden

Never Compromise™

Note for those who care: This manual was written by David (Eden) Nordschow, Eden's Chief Propellerhead & Master of All Things Technical, and Lane Baldwin, Eden's Special Projects Coordinator (Many Other Functions). Any grammar errors are David and Lane's fault, as are the attempts at humor. Please don't blame anyone else for any weirdness, as we were warned several times. Really.