



*S-9 Speaker*



NU FORCE

# NuForce S-9 Construction Overview



In collaboration with  
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As you are about to discover, the NuForce S-9 Loudspeaker is far from being just another “high-end” loudspeaker, but rather a true masterpiece of art and performance. In review of the following you will come to see and understand the extremely complex nature of the product along with its “one of a kind” hand-built quality. The construction methods required to create the unique style and superior performance embodied in the NuForce S-9 loudspeaker are a far cry from the traditional offshore products flooding the world market. Every unit is manufactured from beginning to end in America with a combination of modern, innovative technology, custom engineered fabrication processes, specialized tooling and expert craftsmanship. You can look far and wide and not find another speaker that embodies so much for so little.

To be quite honest, everything about the S-9 heralds both unprecedented performance and “one of a kind” style. The SP Technology/NuForce patent-pending waveguide technology and internal enclosure chambering truly set the S-9 apart from other products. Years of research were required to arrive at the

combination of technologies empowering the S-9’s superior performance. In addition, all electro-mechanical components used are of very high quality and superior performance.

Most others use a material called Medium Density Fiberboard (MDF) as the structural substrate. It offers a reasonable level of performance, but it is mainly chosen because of its low cost. Alternatively, the Baltic Birch Plywood used in the S-9 offers much greater rigidity and freedom from vibration – but its cost per square foot is considerably higher. Adding to this cost, the layered construction method employed creates much unusable, leftover waste. The layered approach is clearly superior from both a sonic and aesthetic standpoint, but it is definitely not a cost efficient use of materials.

## 23 layers of Baltic Birch Plywood

The layering process uses a tremendous amount of adhesive too - approximately ½ gallon per enclosure. It offers an added benefit though – strength! After curing, the enclosure becomes incredibly strong. We use the highest quality adhesive made, so each mating surface can withstand 4000 pounds per square inch of force and there are 22 of them spaced 18mm apart.

Aesthetically, the layered construction offers another benefit as we chose to take advantage of the striking appearance that finishing the “end grain” produces. There are approximately 300 individual layers that are revealed along the full width of each enclosure sidewall, each layer producing a vertical line. Many of these layers posses dark “knots” and other causes of color variation that impart endless permutations of light and dark patterns. This effect, combined with the infinite variety of patterns inherent in the grain “figuring” of the hardwood front panels, makes every unit truly “one of a kind.”



The unusual finish that results is simply the byproduct of working with materials and construction methods that are seldom ever attempted by traditional manufacturers. You will find countless small and a few rather obvious variations from unit to unit. These are evidence to the fact that the S-9 is a real, solid-wood product - - not a garish conglomeration of “engineered-wood” materials covered with slick finishes.

In stark contrast to all the above, most consumers these days are accustomed to the “high-gloss, high glitz” look of many mass-produced products. What they seldom understand or come to realize is that behind the pretty facade of thin veneer and glossy lacquer, there often lies an inferior and relatively inexpensive box construction. As an alternative to this “institutionalized” status quo, we’ve decided to offer a product that would truly offer lasting performance, beauty and value. Most loudspeakers don’t survive the test of time, but after many years the S-9 will likely look and perform the same as the day it was purchased.

You see...the exposed surface of an S-9 is the same Baltic Birch Plywood used throughout its construction and many coats of catalyzed “conversion varnish” are used to produce the final finish. In fact, this expensive coating was specifically chosen for its ability to produce a “high build” layer that will not shrink or crack. Due to the pitted and consequently “very difficult to finish” nature of the plywood’s “end grain,” this special coating was needed. Many coats produce an extremely thick and tough finish that will never crack or wear, and which is impervious to conditions that would totally ruin a lacquered product.

Added to the above, the front panel/waveguide assembly is constructed of solid hardwood throughout. Not only does this produce a beautiful and intriguing pattern in the area where the waveguide has been milled, but it also makes every speaker unique unto itself as no two pieces of wood are identical. If one chooses to select a custom hardwood species, the beauty can be even more dramatic and the product all the more “individualized” to ones own taste and décor.

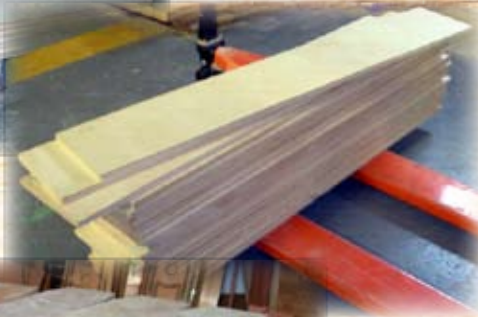
As you read on you will begin to see that the S-9 is certainly not “just another speaker” and is something the world seldom sees anymore in these days of mass produced, cost-based products. It is for this very reason that we have gone to such lengths to produce this documentary. You will come to see that clearly, there are few products to ever achieve this level of performance – period, let alone offer such intrinsic value and pride of ownership. For the potential customer, these facts should give pause for consideration...for the owner, a reason to smile. Without further ado, let us begin our journey into what is the NuForce S-9.





1

First, we start with 5'x 5' sheets of 13 ply, Baltic Birch Plywood for superior strength and beauty. These sheets are then cut into strips for ease of handling and to accommodate the dimensions of the CNC boring/milling center.



2

Once holes for locating these strips in the External Profiling Fixture have been drilled, the strips are then placed in the fixture and the external enclosure profile is cut to create an individual "blank". Twenty-three of these blanks are required to construct one complete enclosure assembly.

3

After all of the external profile blanks are cut they are loaded into the Internal Profiling Fixture. Each the 23 layers is cut by the CNC with a unique internal profile. Each layer's internal profile contributes to the construction of the enclosure's advanced internal chambering.



4

The next step in the process requires that each completed part be sanded on both sides in order to eliminate any chaff or splinters that remain from the milling process.

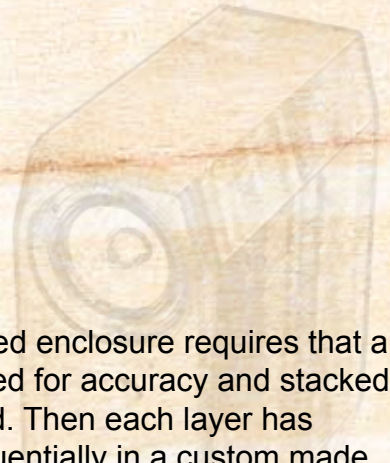




# 5

Assembly of the parts into a completed enclosure requires that all twenty-three layers be sorted, checked for accuracy and stacked in the order they are to be assembled. Then each layer has adhesive applied and is stacked sequentially in a custom made, highly accurate gluing fixture. A very high degree of alignment

accuracy (+/- .005") for each part in the assembly must be maintained in order to produce a useable enclosure. After all the layers have been glued, stacked and pressed, excess adhesive is brushed over the entire enclosure surface in order to seal any small fissures or voids.



# 6

Now that we have a completed enclosure and the adhesive has dried, it must be removed from the assembly fixture. Next we prepare the enclosure for a final finish.

The first step in this process is to remove the rough, glue-covered surfaces. Sanding with specialized equipment of our own design and fabrication is required. Two different machines are utilized in this process to achieve a surface





7 Next, manual sanding to remove scratches and other imperfections from the previous process is required. A high degree of skill is called for at this stage as if careful attention is not maintained; the enclosure can be damaged beyond use.



8 The glued and sanded enclosure is now ready to enter the Final-Finish stage. A low viscosity "wash coat" of "conversion varnish" is used to seal all surface pores and saturate deeply into the fibrous matrix of the wood. After curing, the surface is sanded and voids are "partially" filled. Any major void is filled but smaller voids are left in order to preserve the "nature" of the wood. Were all voids to be filled, the final surface would be indistinguishable from a cheap, synthetic "laminated" material.



9 The final coating process begins. Multiple coats of high viscosity conversion varnish are applied until sufficient material build has been achieved. Sanding is required between applications and a high level of attention and expertise is required in order to produce consistently optimal results.

After the final coat has been applied, the enclosure is left to "cure" for several hours. Once cured, a final "buff-out" of all enclosure surfaces is required.



# 10

In this stage the hardwood front panel containing the waveguide is attached. They are also manufactured "in-house.". Because of the proprietary nature of the manufacturing process of these panels, complete pictures of their fabrication are not available.



# 11

The completed sub-assembly is now ready for final assembly. Internal damping materials, drivers, wiring and the rear Terminal Plate are now installed. Once completed, each enclosure is tested along with its own, individualized external Crossover and Umbilical Cable.

Computerized acoustical analysis equipment is used in order to verify the unit meets all published specifications and is performing properly.



# 12

Finally, the completed S-9 is subjected to one final inspection, prepped and packaged for shipment. We've done everything else, so now the only job left is yours to complete. Setting them up and enjoying them in your own listening room shouldn't be too tough though!

# NU FORCE

# S-9 Speaker

## Listening Impressions

- One of the "fastest" speakers you have ever heard.
- Very high speed and excellent transparency, comparable to the best electrostatics - but without their dynamic limitations.
- Deliver the very widest dynamic range like the best horn speakers, but without the nasality and "honkiness" often associated with them.
- A holographic level of imaging and sound-staging that is far superior to any horn speaker and better than many electrostatic designs.
- The imaging of the NuForce S-9 speakers rivals any mini-monitor on the market, regardless of price.
- The harmonic content, the textures and the timbre of instruments are amazingly accurate.
- Bass extension simply goes much lower than you would expect, given the size of the speaker. The bass is deep and powerful while remaining tuneful, detailed and full of texture and presence. It is punchy; has lots of slam and more than fast enough to keep up with the rest of the speaker.

## Specifications

- Frequency Response: 40 Hz to 25 kHz. +/- 2dB; -6db @ 33 Hz
- Low Frequency Tuning: Proprietary Hybrid Ported Reflex
- Low Frequency Attenuation Slope: 24 dB/Octave below 40 Hz.
- Phase Response: Less than 360 from 100 Hz - 20 kHz
- Group Delay Response: Less than 1mS DELAY SHIFT from 100 Hz - 20,000 Hz.
- Peak Power Handling: Greater than 1,000 WATTS (10mS)
- Short Term Maximum: 500 WATTS (I.E.C. 268-5)
- Power Handling: Long Term Maximum - 200 WATTS (I.E.C. 268-5)
- Sensitivity: 89 dB @ 2.83V /1M & 86dB @ 1 W/1M
- Impedance: 4-Ohms (nominal)
- Crossover: 4th order symmetrical, in-phase Linkwitz-Riley @ 1,250 Hz.
- Minimum Recommended: 50 WATTS RMS / Channel
- Amplifier Power: 200 - 750 WRMS @4ohm / Ch. preferred
- Low Frequency Drivers: 2 X 6.5" Aluminum Cone w/ center Phase Plug
- High Frequency Driver: Waveguide Loaded 1 Textile Dome - Ferrofluid Cooled
- Dimensions: 22.5" H X 9.0" W X 17.5" D
- Weight: 73 lbs



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