

# The Piccolo Monitor Speaker

## Designer's Comments

When Mark asked me to design a series of kits for Meniscus I asked what he was looking for, and he replied that it was completely up to me. He said I could use any of their drivers that I wanted to work with. Of course, as a designer, the opportunity to design a super exotic reference speaker is quite tantalizing, but I quickly understood that no matter how good this speaker was, due to its cost Meniscus would likely sell very few, and very few enthusiasts would benefit from it. After some thought I decided that my goal would be to design the best possible speakers for the cost, and give the audio enthusiast the opportunity to move into high-end sound on a more limited budget.

Loudspeaker designers will tell you that it is not that hard to design an incredible speaker using the finest components, but it is much more difficult when you are limited to much less costly components. However, that may not be the case here. The new line of SB Acoustics drivers are true exceptions to the rule. They offer an extremely high level of performance and construction for the price. Given the law of diminishing returns there is no reason why kits using these drivers couldn't approach the performance of systems costing many times their price.

The first speaker in this series of kits has been named the Piccolo. It is very small speaker that provides a very satisfying musical experience, like the instrument that it has been named after. The Piccolo is a small two-way that measures 13" tall by 7.5" wide by 8" deep. The internal volume is approximately 7.5 liters. It falls in the same size category as the LS3/5a and many of the small monitor speakers that have evolved from it since. The Meniscus cabinet consists of ¾" MDF with a double layer front baffle and an internal brace. It is a very solid cabinet construction on par with the finest small speakers.

The woofer selected is the SB Acoustics SB15NRX30-08-UC. Despite the reasonable cost, this is a very well made driver, and is competitive with drivers costing 4-5 times as much. It has a cast frame and a state of the art motor design that significantly reduces motor distortion. The cone is the uncoated version of the Kapoc cone. This is a paper composite cone with papyrus reed fibers to increase strength. This cone has a very high stiffness to mass ratio, which is a very desirable feature for a bass-midrange driver.

The tweeter is the SB29RDCN-004 ring tweeter with neo magnet. It is extremely linear and, like the woofer, has very low distortion in its operating range. This tweeter is already developing quite a following and is used in some very high end commercial speaker systems.

The crossover brings these two drivers together with a level of coherence not normally found at this price point and even in some much more expensive speaker systems. The crossover has been optimized in both the frequency and phase domains at the same time. The frequency response is exceptionally flat from 100Hz up. And the two drivers track each other in relative acoustic phase, not just in the crossover region, but over a very wide bandwidth, with excellent phase tracking from 100 Hz to 5 kHz. The crossover point is at 2.1kHz. The combination of this type of in-phase crossover and the low crossover

point provides a very wide and smooth off-axis response with no exaggerated off-axis “bloom” in the tweeter’s response just above the crossover point like many small speakers with higher crossover points exhibit. And this translates into a smooth power response in most listening environments. The flat on-axis response and smooth power response helps this speaker disappear with extremely precise imaging.

The kit builder has a choice with regard to the bass response of the speaker. Originally designed as a small sealed system, it has a -3dB point of 70Hz with a Qtc of .75. This response offers excellent integration with most subwoofers. However, it is also available with a rear vented enclosure of the same size. The vented speaker has a small rise in response of about 1db in the 100Hz range and has a -3dB point of 59Hz with a -6dB point of 48Hz. The vented version has an incredible sense of scale and weight that seems to defy the size of the speaker. Sitting on a pair of quality stands a pair of these small speakers would satisfy the majority of music lovers on 95% of the music they play. What they give up in ultimate output level, they more than make up for in a pinpoint imaging, open soundstage, realistic scale, and overall coherence. This is a small speaker designed to deliver the highest level of performance at entry level prices. In fact, it is a very high level of construction and performance competitive with the finest small speakers at any price. You are just able to have this performance at entry level prices.

Jeff Bagby

### **Piccolo Revisited**

Over the holidays I had a couple of guys over - Ben Shafer (Wolf) and Rory Buzka, and we listened to several speakers and discovered some new music that each other brought. It had been a while since I had listened to the vented Piccolos, and this was probably the first extended listening session with them since venting them with the ports. All of us, including me, were blown away by these little speakers.

They possessed a sense of acoustic scaling that far exceeded their size. They are extremely flat from the upper bass on up, but with the ports have a little bump in the mid-upper bass range and then extend down to about 50Hz before rolling off. This is exceptional for such a small speaker. Even though I was only powering them with a 75 Watt Receiver and never really pushed them, they seemed to fill the room with very impressive sound, and more bass than they had any right to. The bass seemed full and deep and Rory kept going over to confirm that the subwoofer was indeed turned off. The little speaker played much bigger than they actually are, and we all felt that these would satisfy 95% of the people out there all by themselves. I was so happy with them that I made my wife sit down and listen to them with me last night just to get her impressions on them too. She agreed with the rest of us.

These are really a top-of-the-line mini-speaker: Excellent low distortion drivers, low crossover point, near perfect phase tracking, flat response, stable impedance, great bass extension, a solid cabinet - I would put them up against anything in their size range at any price