

The Mandolin 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 was named the Piccolo. The second of the series is the Mandolin. Like the Piccolo, it is small speaker that provides a very satisfying musical experience, like the instrument that it has been named after. The Mandolin is the big brother to the Piccolo and the family resemblance will be evident from the first look and listen. What the Mandolin offers is a slightly larger loudspeaker, with a larger woofer, able to deliver deeper bass extension, higher ultimate output levels, and a higher sensitivity.

The Mandolin is a two-way speaker that measures 15" tall by 8.5" wide by 11.5" deep. The internal volume is approximately 15 liters, which is twice that of the Piccolo. It falls in the same size category as many common stand mounted two-way speakers available today. 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 SB17NRX30-08-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 SB29RDC-004 ring tweeter. It is the larger ferrite magnet version of the small tweeter used in the Piccolo. It is extremely linear and, like the woofer, has very low distortion in its operating range. These tweeters are already developing quite a following and are being 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. Like the Piccolo, the crossover has been optimized in both the frequency and phase domains at the same time. The frequency response is exceptionally flat from 45 Hz up. And the two drivers track each other in relative acoustic phase, not just in the crossover region, but over a very wide bandwidth. The crossover point is at 1.8kHz. The frequency response of the Mandolin on its design axis is among the flattest measuring responses of any small speakers available today. 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, and helps this speaker disappear with extremely precise imaging.

Designed as a vented speaker with a rear mounted port tuned to 38Hz, the speaker has a -3dB point of 42Hz with a -6dB point of 38Hz. Unlike the Piccolo, the Mandolin is tuned to be exceptional flat to its bass roll-off with no upper bass rise. The speaker offers a wonderful sense of scale and weight, and bass extension that seems to defy its size. Not many speakers this size can reach into the 30 Hz band with low distortion. Sitting on a pair of quality stands a pair of these small speakers will provide near-full range performance for the majority of music lovers on most the music they play, without the need for a subwoofer. However, if a subwoofer is used these will combine with it gracefully and allow a fairly low crossover point to the sub, aiding in helping the subwoofer disappear and provide a greater sense of realism. This is a small speaker designed to deliver the highest level of performance and musical satisfaction 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.

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