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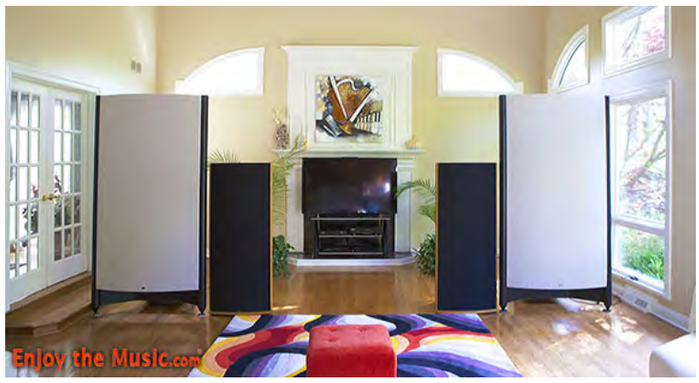
SA Equipment

World Premiere Review!

Sound Lab Majestic 545 Full-Range Electrostatic Loudspeakers

The quest for realistic sound from a pair of speakers is likely to end here.

Review By Tom Lyle



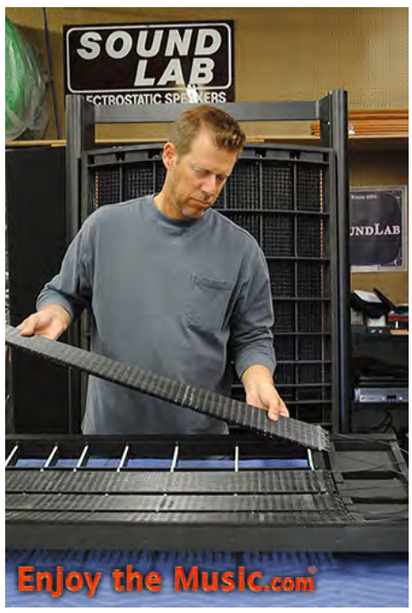
The same pair of Sound Lab loudspeakers have been my reference for about 15 years. The reason I acquired them is simple: Back in the day, I heard a pair of Sound Lab A-1's in a friend's large system, and fell in love. To this day, these speakers are the best I've ever heard of any type, as they produce a sonic hologram of the recording that I can visualize with my ears. But I didn't immediately go out and purchase a pair of A-1s. This was not only because they cost much more than I could afford at the time, nor was it because they weighed nearly 200 pounds. It was because of their size. The massive Model A-1's are over 7 feet tall, 3 feet wide, and at their base about two feet deep. Our living room at the time, which was also our listening room, in no way could accommodate them. Eventually the planets aligned, and I purchased a pair of Sound Lab speakers. Fortunately the Sound Lab Majestic 545 electrostatic speakers as reviewed here bring things down to size nicely.

Not all Sound Lab speakers are as large as the A-1. The speakers I acquired, the hybrid electrostatic/dynamic DynaStat, were still rather large, but not as nearly as towering as the A-1. The DynaStats are "only" about six feet tall and about 15 inches wide. The base is 19" deep, and about 15" wide because of the cabinet at the bottom of the speaker that houses a passive 10" woofer. Yes, as I mentioned, the DynaStats are still quite large, but not nearly as large as the A-1. Still, when some people see these "smaller" Sound Lab loudspeakers in my listening room, especially when these people are non-audiophiles, they often elicit a gasp, followed by, "Are these speakers?", or simply, "What are these?" Although wider than the DynaStat, Sound Lab's newest electrostatic model, the full-range Majestic 545, is not nearly as tall. It doesn't even reach the 5-foot mark. These loudspeakers will fit in many more listening rooms than Sound Lab's other offerings.

Words

Not all people, not even all audiophiles, know how an electrostatic speaker works. So, a few words about them might be helpful. The most popular type of loudspeaker, by far, is the dynamic speaker. A dynamic speaker has one or more drivers, which is basically a cone made of various materials that contains an electromagnet. This metal coil creates a magnetic field when electric current flows through it, usually because of an audio signal sent from a power amplifier. The coil acts as a magnet, and because of the signal the direction of the current in the coil flips the poles of the magnet. An electromagnet is inside of the speaker, and placed in front of a permanent magnet. This magnet is fixed, and since the electromagnet is mobile when the musical signal is passed through the coil of the electromagnetic the direction of its magnetic field is changed. The speaker cone is attracted and repelled from the permanent magnet, vibrating back and forth, creating sound waves.

An electrostatic speaker is a totally different beast that takes advantage of the laws of physics that state that like charges attract and unlike charges repel. A thin membrane is stretched onto a rigid frame, and this membrane is coated with a low-mass, electrically conductive substance. Two stiff, flat electrodes, that are electrically insulated to prevent discharge, called "stators" are placed on either side, which have holes to permit sound to pass through them. An electrical charge is placed onto the membrane.



An audio signal from a power amp is connected to the two stators via a step-up transformer, and this signal is applied with the exact same signal, but they are out of phase from one another. The signal voltage on one stator increases positively, so it repels the positive charge on the membrane. The signal on the other stator is increasing negatively, so it attracts the positive charge. So, there is a push-pull force exerted on the membrane. When the audio signal reverses, the push-pull force also reverses. The compliant membrane moves because of the push-pull electrostatic force.

One might not fully understand the above, most likely because I'm over-simplifying the process. But electrostatic speakers can be made into large, relatively thin panels. The downside is that the panels must cover a large area to reproduce the lower frequencies, and most audiophiles cannot, for various reasons, fit electrostatic speakers with these very large panels into their homes. The good news is that Sound Lab has managed to get more bass out of smaller panels than any other manufacturer due to their extensive research on the subject. But let's be clear – these panels are still quite large. I'm lucky, I have a spouse that has always been willing to put up with me and my large speakers, even when our living room doubled as our listening room. About ten years ago we moved to a new home, and I moved my gear into a dedicated listening room. Life is good.

Added

Sound Lab has recently added three speakers to their Majestic line, the Majestic 945 the Majestic 845 and the Majestic 545 as reviewed here. **Dr. Jules Coleman reviewed the Majestic 845 in *Enjoy The Music.com*** a couple of years ago. They are now his reference. The Majestic 845 is over 7 and a half feet tall, and it incorporates many of the new technologies that Sound Lab has developed over the past decade or so. I'm privileged to review the Majestic 545, the smallest speaker in the Majestic line. The Majestic 545 isn't as tall as my older Dynastat, at just under 5 feet tall, but it is still a rather large speaker, as its curved front is more than a foot wider than my older Sound Lab DynaStat. The Majestic 545 is a full-range electrostatic loudspeaker, so unlike the DynaStat, it doesn't have a dynamic woofer to augment the bass frequencies. It doesn't need one.

Bass

In the previous models of Sound Lab electrostatic speakers, the panels that handled the bass frequencies were located at the bottom of the speaker. After years of research at Sound Lab they discovered that using their newly devised "Bass-Focus Technology" principles they could place identical low-frequency sectors at both the bottom and the top of the panel. That way, the radiating area of the other sectors become smaller. In the new speakers, the smallest radiating sector is in the middle of the panel, where it once was at the top of the panel. With the new Bass-Focus arrangement the bass sectors are at both the top and bottom, and it now can simulate a low-frequency source having a dimension the size of the height of the panel rather than just a single sector at the bottom of the panel as was the case previously. This makes the panel more directional at lower frequencies in the vertical plane, which increases bass heard at the listening position.

Another benefit is that the amount of radiating area at lower frequencies is doubled compared to the older panels, which in turn doubles the radiating energy. In other words: one can now hear more bass coming from the speaker. The larger Majestic 845 that Jules Coleman reviewed last year is specified to reach as low as 26Hz. The Majestic 545 that are currently in my listening room, and reviewed here, can reproduce frequencies as low as 32Hz, which is not bad for an electrostatic speaker of its size. In the past, this was practically unheard of.

Large

The Majestic 545 arrived at my home by truck, and was shipped in four cartons – two huge fiberboard crates, and two smaller, but still rather large, cardboard boxes. The crates contained the panels, the boxes the transformer assemblies that support the panels by attaching at their lower portion. Dr. Coleman had a horrible experience as the shipping crates were damaged in transport, and had to be returned to Sound Lab for replacement. My experience with the shipment was the opposite of his, as the containers and their contents arrived in perfect condition. Perhaps the trucking company learned their lesson, or mine was a different shipper that used greater care. Nevertheless, the shipment was uneventful. Unloading the panels from the crates and the transformers from their boxes was also uneventful, other than lugging them upstairs to my listening room located on the top floor of our house. I could imagine that if I was sent the Sound Lab Ultimate 545 to review, which is identical to the Majestic 545 except it built with a steel frame, it would have been heavy enough to need some help getting them up the stairs, but even though they were quite cumbersome, I managed.

One must assemble the transformer assemblies and attach them to the panels, and was again, it a very uneventful procedure, other than having to deal with my excitement at having new Sound Lab speakers in my system. I moved my older Sound Lab DynaStats to the side of the room, and placed the Majestic 545 in almost the exact position as the older speakers, which positioned the

panels about four feet from the front wall. The DynaStats accept bi-wire speaker cable, as there were a pair of speaker posts for the panels and the woofer cabinets. The Majestic 545's used in this review have but a single pair of speaker posts. However, I was informed by Sound Lab that they can be set up for bi-wiring as an option. Regardless, I was able to finesse the premium Westlake Audio Bi-Wire speaker cable onto these single posts.

The power amp I use is the 350 Watt per channel Pass Laboratories X350.5. At first the preamplifier I put into service was the **Mark Levinson No. 523 that I reviewed** at the end of last year, but most of the time I used the very impressive **Merrill Audio Christine reviewed in last month**'s issue. The analog front-end remains my Basis Audio V turntable, with a Gold Note Tuscany phono cartridge mounted on a Tri-Planar 6 tonearm. The turntable's power cord is connected to an AC regenerator, providing it with a near perfect 60Hz sine wave when spinning 33.3 rpm records, and at the press of a button 81Hz for 45rpm discs. The amazing **Dan D'Agostino Master Audio phono preamplifier I reviewed** eventually had to be returned so they could display it at the Chicago audio show AXPONA, but thankfully I was able to spend a good deal of time with it for this review before it had to be returned. For a while I used the excellent **Merrill Audio Jens phono preamp**, but that phono stage also had to be returned for the same show where the Dan D'Agostino was being displayed. My reference **Pass Laboratories XP-15 phono preamplifier** was called back into service for the remaining portion of the review.

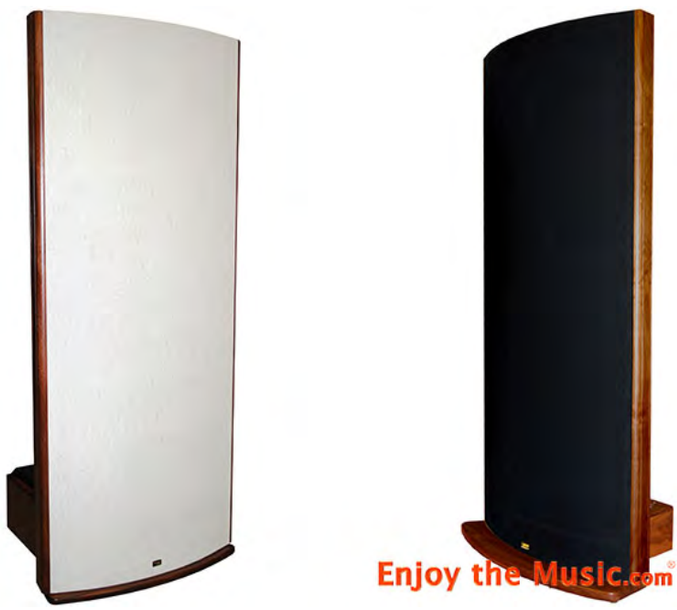
The Pass phono preamp might not be as pricey as either of the other phono stages, but when I placed it back into my system I was reminded of its excellent performance. The digital front-end continues to be a computer-based music server, with a Furutech USB cable feeding a **AURALiC VEGA DAC**. Occasionally I'll spin a silver disc such as an SACD on an OPPO BDP-83 Special Edition universal disc player. Just about all my gear fits on an Arcici Suspense equipment rack, and cabling is mostly my MIT, with some front-end equipment relying on Merrill Audio's fine ANAP interconnects. My medium sized dedicated listening room is wired with two 20-Ampere AC power lines that run directly to and from our home's electric panel in the basement.

Torturous

Burning-in the Majestic 545 was torturous, since I knew I was not hearing them at their full potential. The volume couldn't be raised too high, as the speakers complained by compressing the heck out of the sound, plus, this sound was a bit thin, and therefore not very natural. I can say patience is a virtue only because around the 50 hour mark the speakers opened up, and I began to *really* hear a pair of Majestic 545's. One of the things that struck me was how much better these speakers sounded compared to my older DynaStats. Yes, the Majestic 545's are much newer than the DynaStats, so I expected some improvement, but these newer models had sonic characteristics that were closer to the sound I remember coming from the A-1s at my friend's house than my older Sound Lab! Simply put, the Majestic 545's trounce the DynaStats.

Those accustomed to the sound of electrostatic speakers, but not familiar with Sound Lab, might be taken aback once they finally get a chance to hear a pair. With an appropriate listening environment, that is, located in a room that is at least medium-sized and can accommodate different listening positions for a pair of rather large speakers, one will be rewarded with a sound that is nothing like a typical electrostatic speaker. This is because the Majestic 545's are not speakers that are limited to one genre, such as the stereotypical recordings of small ensembles, as the Sound Lab's ability to separate instruments, voices and sounds seems unlimited. Their dynamic response is intense, as they also seem unlimited in their ability to respond to any musical situation of which they are asked. They can also play much louder than any other electrostatic speakers I've heard, without starting to compress the sound or suffer some other sort of anomaly.

More than once I enjoyed binge listening through Led Zeppelin's first five albums that were reissued by Classic Records on 200-gram vinyl. Depending on the album (as each was recorded with different engineers in different studios) the band would be spread out within a huge soundstage, each instrument and voice in its own area of the soundstage. Of course, the arrangement of where each instrument and voice was in the soundstage was quite artificial, as there are no rules to stage arrangement as there is with an orchestral recording, but still, it was always easy to hear what I can imagine guitarist and producer Jimmy Page intended. When listening I often had the feeling that I was hearing the playback with more fidelity to the original than he had ever experienced, short of a live mic feed through the monitors in the control room, which of course Mr. Page couldn't experience as he was in the studio playing his instrument, listen to himself through what I presume were crappy studio headphones. But I've never enjoyed these Zep albums as much as I did when listening through the 545's. John Bonham's explosive drum style was especially rewarding, as it wasn't missing a sonic ounce of muscle, his kit spread out between, behind, and to the sides of the speakers, enveloping me with sound.



I wondered why in Jules Coleman's review he complained that the larger Sound Lab were limited in their overall volume level and dynamic range, since I didn't find that at all to be the case with the smaller Majestic 545's featured here. In an email exchange with Sound Lab's Dr. Roger West, he explained to me that the internal structure of the panels and the electronics of the two

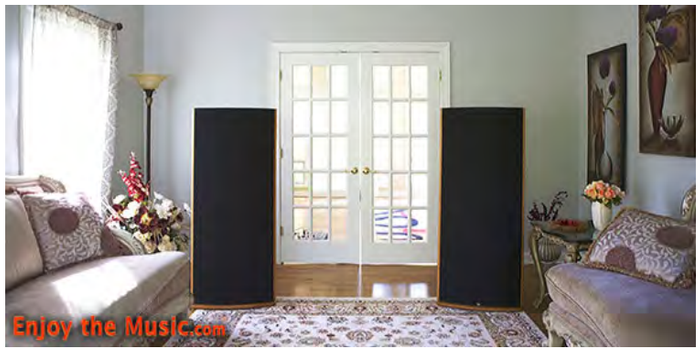
speakers are identical. The only technical difference is their radiating area. With the Bass-Focus technology it makes smaller panels possible, and is used on all new models.

Yes, the sensitivity of the smaller panels is lower because of this smaller radiating area, but there are also advantages as the impedance being higher, especially at higher frequencies -- the Majestic 545's can handle up to 600 Watts of linear power. Dr. West went on to say that it's difficult to say what factors were influencing the negative comments on the much larger Majestic 845s. Perhaps it has something to do with room damping, as my room is fitted with acoustic treatment panels and the room where the Majestic 845's is not. Perhaps, one of the major factors is that he didn't have bass-focus technology in his panels. That would have added greater richness and dynamics to the sound. If his amplification could drive the speakers at the rated maximum he probably would not have made a comment about limited dynamics.

I think the take-away is that one's room probably has much to do with the sound one gets from these speakers as anything else, even though the nature of electrostatic speakers is that they minimize unwanted room interactions because the panels are extremely directional. But, electrostatic speakers project as much sound from the rear of the speaker as they do from the front of the speaker, therefore the environment behind the speakers might influence their sound as much as what is in front of them. The advantage of the Majestic 545 is that it is the smallest full-range electrostatic speaker that Sound Lab has ever produced. It will fit into many more rooms than the other, much larger electrostatic speakers that were manufactured in the past.

Perhaps I'm spending too much space describing the results one might get from the room in which the Sound Lab loudspeakers are placed. They certainly do not behave as dynamic speakers when it comes to synergy or lack thereof with the listening room. And since my listening room is a dedicated, treated room, I feel as if the Sound Lab Majestic 545 were on their best behavior. Where I do agree with Dr. Coleman is his remarks on the benefits of Sound Lab design of full-range electrostatic speakers, and their behavior off-axis. Yes, there is a sweet spot. But when listening off-axis the sound does not become unlistenable. Akin to an excellent sounding concert hall, there are the best seats in the house, and then there are the other seats that are not in this ideal location. From those other seats one will hear a different perspective on the sound. This sound may be different, but usually not horrible.

The greatest achievement of the Majestic 545 is when it comes to "realism". To me, that is the most important characteristic that a pair of speakers can have, and why I hold the Sound Lab Majestic 545's in such high regard. To me, this is what being an audiophile is all about, the quest for the Holy Grail of not being able to distinguish between a recording and the real thing. No, recordings played through the Sound Lab are not indistinguishable from the real thing. Obviously, the level of realism will depend greatly on the sound quality of the recording. But there are plenty of times during the review period when there were selected instruments that came *awfully* close to sounding like "the real thing", or at the very least they captured the gestalt of the recordings I was playing through them better than any other speakers I've ever heard in my room.



I've lost count of the times during this review period when I've been startled by an instrument unexpectedly "entering" my room, and for a split second reacting as if there was an intruder. This didn't happen just with unfamiliar material, but often with music I've been listening to all my adult life. This occurred again only a few nights before starting to write this review, when I was listening to Miles Davis' *Nefertiti* album, as I nearly fell off my chair as Herbie Hancock's piano entered through the left speaker after Miles finished one of his solos. What makes this more surprising was that this happened when listening to this album coming my music server of files ripped from the CDs from the box set *Miles Davis Quintet 1965-1968,* a plain vanilla 16-bit/44.1kHz six CD set.

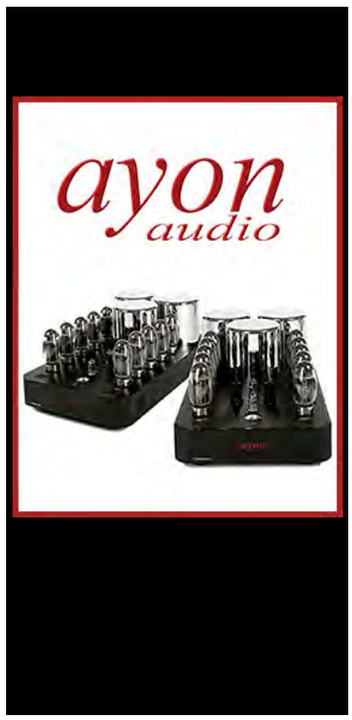
Even though the Majestic 545's are called "full-range electrostatic speakers", their bass doesn't reach down to the netherworld. But the bass that they have is a bass that I could imagine plenty of listeners will be very satisfied with. Others might want to augment the speakers with a subwoofer. I listen to too much modern music where the bass on the recording reaches much lower than an acoustic double bass, and although it is said that the human ear cannot sense a distinctive bass pitch below 30Hz, much of the music I listen to contains frequencies well below this, and can be felt as well as heard. That is why I have relied on my Velodyne subwoofer with its 15" woofer with just about every speaker that's ever passed through my listening room, many with a bass response that goes much lower than the Sound Lab Majestic 545's. I set the crossover on the sub so it only produced frequencies below what the Sound Labs couldn't reproduce, which is to say, the crossover was set at a fairly low frequency. This reproduced the sub-sonic frequencies I desire, while still relying on the Sound Lab's bass for much of the sound that is produced by instruments and sounds that contain a great deal of bass frequency energy.

Without the sub connected the quality of the 545's bass is wonderful -- a tight, pitch specific bass that will amaze many, and not just because these frequencies are coming from a pair of electrostatic speakers. And even if one isn't caught off guard, this bass might be at a level where no subwoofer is needed, since there will be many owners of these speakers that might listen to music that is less aggressive than the genres I'm apt to listen to. During the review period I listened to plenty of jazz and other acoustic music without the subwoofer connected, and was very satisfied with the sound that was coming forth from these very impressive speakers.

In the past, I've heard some complain that the treble of electrostatic speakers can be more than a bit rolled off. Not so with the Majestic 545's. I had a group of audiophiles over my home to listen to the latest Mobile Fidelity Sound Lab reissue of Santana's *Abraxas*. We compared this 2-disc "one step" 45rpm version with the single disc older version, and besides listening with our audiophile hats on we also spent a good deal of time simply enjoying the album. With the coterie of percussion on this album, much of our focus was on the treble response that was being reproduced on each version, the newer MFSL winning this shoot-out by wide margin. There was never any question whether the Majestic 545 was rendering the sound of the treble in a realistic manner or not. The highest treble of the cymbals and metallic percussion was reproduced in the most life-like manner I've ever heard by a pair of speakers in my listening room.

When I was spinning Beethoven's *Seventh Symphony* with Kurt Masur conducting the

Gewandhaus Orchestra of Leipzig ripped from a Pentatone SACD, it made it clear that the Majestic 545 could easily handle one of my favorite symphonies this man ever wrote. I'm rather critical of speakers and components that can't handle a large orchestra at a reasonable volume without complaining, by compressing, adding sibilance, or any other departure from letting the music flow unimpeded, especially when reproducing a piece of music I adore. The Gewandhaus Orchestra was spread across a huge soundstage that extended way past the Majestic 545s' outer edges, and *way* behind front wall of my room. I've heard this symphony what seems like countless times in concert, and many more times on record, and this version is currently one of my favorites. Masur doesn't take too many risks, but what a great recording! It's a multi-channel SACD mixed down to two channels for my system, but I have no problem with that because every instrument seemed to be in its "correct" space in the soundstage.



Through the Majestic 545's it was almost overwhelming, as the incredible sound coming through the speakers became somewhat of a distraction. It was if I was peering into a sonic diorama of an orchestra. Sure, the ensemble was made much smaller, as capturing the sound of a full orchestra playing behind a fifty-foot proscenium through a two-channel system in one's home is a sound that hasn't yet become reality. But this SACD is one of the best sounding versions I've heard on digital, and that's saying lots, only because I have a few favorites on LP that I don't think I'm going to stop listening to any time soon. But the tonality of the string section of the Gewandhaus Orchestra is certainly one that I can live with, especially when its sound is so liquid, so palpable, and without any sonic glitches that would distract me from enjoying this great work of art – other than the fact that I was constantly being distracted by the lifelike sound of the instruments and the sections of the ensemble. My mind would focus on one instrument or section, then wander to another, then my thoughts might turn to how Beethoven was a master orchestrator, then to another concept that might not have anything to do with Beethoven's *Seventh*. These meditative experiences would become a normal occurrence when listening to these very impressive speakers.

Made

The *cliché* that "no speaker is for made for every listener" is certainly true when it comes to the Sound Lab Majestic 545. They need space to perform their best. They also need a good amount of power to perform their best. Unless one lives alone, one must have an understanding partner or family if one is going to bring a pair of these rather large electrostatic speakers into one's home. Plus, even though their price doesn't even rise to the heights of what some audiophiles consider "average" for a pair of great speakers, they might be out of the range of some audiophile's budgets – although, at $13,450 I consider them a stone-cold bargain. This is because they perform as good as any speaker I've ever heard in my listening room (although on a slightly smaller scale), combined with what I consider a *very* reasonable price. One's search for realistic sound from a pair of speakers is likely to end here, since I have not yet heard a speaker in my listening room with such a high performance to price ratio as the Sound Lab Majestic 545. Recommended? Absolutely.

Tonality	♪♪♪♪♪
Sub-bass (10Hz - 60Hz)	♪♪♪♪
Mid-bass (80Hz - 200Hz)	♪♪♪♪♩
Midrange (200Hz - 3,000Hz)	♪♪♪♪♪
High Frequencies (3,000Hz On Up)	♪♪♪♪♩
Attack	♪♪♪♪♩
Decay	♪♪♪♪♩
Inner Resolution	♪♪♪♪♪
Soundscape Width Front	♪♪♪♪♩
Soundscape Width Rear	♪♪♪♪♩
Soundscape Depth Behind Speakers	♪♪♪♪♩
Soundscape Extension Into Room	♪♪♪♪♩
Imaging	♪♪♪♪♪
Fit And Finish	♪♪♪♪♩
Self Noise	♪♪♪♪♪
Value For The Money	♪♪♪♪♪

Specifications

Type: Electrostatic loudspeaker
Frequency Response: 32Hz to 20kHz (+/-3dB)
Audio Power: 50 to 600 Watts (min/max)
Horizontal Dispersion: 45 degrees
Vertical Dispersion: Projected field of speaker height
Vertical Angle: adjustable
Impedance (nominal): 8 Ohms
Sensitivity: 86dB/W/m
Bias Power Supply: 117/230 VAC, 50/60 Hz, 2 watts

Controls: Brilliance: Continuously variable
Mid-frequencies: Four position switch in 3dB steps
Bass level: Four position switch in 3dB steps
Bias Power Supply: Continuously variable
Dimensions: 56" X 24" X 5.5" (HxWxD)
Depth at base: 24"
Weight: 97 lbs. each speaker
Price: $13,450 per pair

Company Information

Sound Lab
P.O. Box 409
Gunnison, UT 84634

Phone: (435) 528-7218
Fax: (435) 528-7219
E-mail: soundlab@burgoyne.com
Website: www.SoundLab-Speakers.com

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