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ELECTRONICALLY REPRINTED FROM JANUARY 2012 ISSUE 219

EQUIPMENT REPORT

Vandersteen Model 5A Carbon Loudspeaker

Upgrading a Classic to a New Level
of Musical Realism

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I don't change reference speakers casually. The Vandersteen 5A Carbon, however, is a truly exceptional speaker, both in sound quality and in providing the adjustments that allow it to function near its best in virtually any listening room. It is one of the finest point-source speakers I have heard, and it provides a remarkable mix of dynamics, accuracy, and truly deep bass for any speaker its size.

The Vandersteen 5A Carbon may not have all of the performance capabilities of the Vandersteen 7 that Robert Harley reviewed in the October, 2010 issue, but it comes extraordinarily close and it is much easier on the pocketbook. The Vandersteen 5A Carbon sells for \$24,000 in standard finishes (custom automotive finishes also available), while the Vandersteen 7 sells for \$48,000. Moreover, if you are the original owner of a Vandersteen 5, you can upgrade it for \$11,150, and if you have a Vandersteen 5A, you can upgrade for \$8650 (again, for original owners). These are scarcely bargain-basement prices, but they will bring you amazingly close to the limits of what a speaker can do for the money.

Moreover, this is a speaker that can be adjusted to work at its best in even difficult listening environments. It is compact enough to fit into real-world living rooms without dominating the décor (something I take quite seriously given that I have post-modern medieval décor with MOMA and Ringling overtones). I want a reference speaker that is compact enough and looks good enough to fit into a living space, rather than one that needs to be pampered in a dedicated listening room or that forces me to use an assortment of devices to limit room interactions.

I also want a reference speaker that can be set up in ways that allow me to enjoy listening with a friend, and I want a speaker that does not favor a given sound signature or type of music and gets the best out of ordinary recordings as well as great ones. The Vandersteen 5A Carbon meets all of these tests, and it is one of the "must-listen" speakers you have to audition if you are considering a speaker in anything like its price range.

"Carbon" or "Pistonc"

If you are familiar with the Vandersteen line, or own the earlier Vandersteen 5A, you may wonder about this level of praise for a speaker which is the third generation of a design that has already been around for four years and which earned outstanding reviews in each of its earlier incarnations. The key changes, after all, are "just" the midrange and tweeter.

Cone speaker technology has been around so long that it existed even when Paris Hilton was a girl. More seriously, the Model 5 and Model 5A are advanced designs even by the technical standards set by most of today's competition. Vandersteen was one of the first companies to use FFT computer analysis for the design and quality-control of time-and-phase-accurate loudspeaker systems. In fact, Vandersteen claims that it delivered the first full-range, time-and-phase-accurate, minimum-baffle, vertical-array speaker system with the introduction of the original Vandersteen Model 2 loudspeakers in the mid 1970s.

The active subwoofer in the Vandersteen 5A Carbon is the same design as in the original Model 5 that was introduced in the mid-1980s. It still provides the same multiband bass-equalization, which allows bass response to be tailored to a variety of speaker positions in a variety of rooms and does so without processing in

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the signal path above bass frequencies or the use of DSP.

That said, the change in the tweeter and midrange driver technology to a carbon sandwich of carbon and balsa wood cones still makes a tremendous improvement in sound quality.

Granted, we have all heard similar claims about drivers in the past, but this time you can really hear the difference! Moreover, the upgrade in drivers allows you to hear more of the merit of all the other features of the Vandersteen design. The Model 5A Carbon provides remarkable transparency without “edge” or distortion at any rational—or even reasonably irrational—listening level. It does so with smooth and flat frequency response almost regardless of the dynamic levels and contrasts, and it manages to do so without sacrificing even the finest levels of musical detail.

The 5A Carbon builds on the strengths of the original Vandersteen 5 and 5A. The construction, alignment, and positioning of the midrange and treble drivers allow a point-source wavefront, maximizing the phase coherence of the loudspeaker at the listening position and minimizing time smear. This is helped by the use of first-order crossovers to achieve perfect phase coherence, and by the high-quality components and high-purity silver internal wire in the crossovers.

As is the case with most Vandersteen designs, these features are coupled to the use of the same minimal baffle and diffracting surfaces for the tweeter and midrange as in the Model Seven, and you can hear the result in a clarity equivalent to the best electrostatics like the Quad 2905s or ribbons like the Magnepan 3.7s.

As Robert Harley’s review of the Vandersteen 7 indicates, the top of the line adds yet another bit of clarity—not only because it uses carbon technology for all of its drivers, but because it adds proprietary carbon-cladding on both the interior and exterior surfaces of the enclosure. The 5A Carbon’s enclosure, however, is made from the same constrained-layer-damped non-resonant materials and the same molded, epoxy-composite material used for its driver baffles and plinths.

The 5A Carbon, however, has none of the dynamic range and loudness limits of the Quad 2905, and does not have the “sweet spot” in listening level common to many speakers of all types. In fact, it was interesting to watch my sons and daughter set the volume to their own taste rather than to the level dictated by the speaker’s performance. No one in my family has the same taste in music or naturally listens in the same way, but all of my children have grown up with a reviewer and have learned to work within the limits of the speaker when they have to. In this case, they all chose their own playback levels, from quiet to unpleasantly loud.

Being able to choose your loudness level without having the speaker make part of the choice for you may initially seem like a minor performance advantage, but I’d think long and hard about your own listening experiences. How many times have you found the speaker *does* impose its own loudness setting and dynamic limits on your taste? How many times has a speaker forced you to make trade-offs between the best low-level dynamic contrasts and detail and high-level dynamics? How many times have you had to crank up the volume to get to “flat” or had to turn it down to get more clarity and detail? The 5A carbon is scarcely perfect—nothing is—but it is remarkable for any speaker and especially for any speaker close to its size and limited number of drivers.

Let me give a tangible example. The last movements of Saint Saëns’ Third Symphony (try the Michael Murray version on Telarc CD 86304) provide some of the most complex dynamics and detail of any music, and particularly of acoustic music. The movements are certainly a test of the deep bass, and are often used for this purpose, but they also involve virtually every other instrument in the orchestra and often in complex passages that rapidly shift in soundstaging as well as in the mix of instruments. The 5A Carbon provided a level of clarity and musical realism with the Telarc version of this Symphony that I have never heard before from any speaker, and did so in spite of the fact that this is one of the most demanding recordings ever made.

You may never want to take your system out to the race track for that particular spin, but you do want to know that your speaker can live up to the test. Moreover, to go to the opposite extreme, the later Glenn Gould piano recordings are almost all exercises in low-level detail and contrasts, coupled with low-level eccentric noises and sometimes a low-level “sing-along” by Gould. Like the solo cello work of Jacqueline du Pré, this is intensely personal music where you want every bit of detail to come through without coloration or loss of realistic detail. The 5A Carbon can’t correct for the problems in these recordings, but it gets the best out of them at natural listening levels to a degree that is truly exceptional.

I should note that the Vandersteen 5A Carbons do not have the forgiving frequency response of some other speakers. There is no dip in the midrange to help deal with the chronic close-miking that affects most modern recordings. There is no peak in the treble or bass to add a bit of extra energy. They will not “help” the recording or your front-end electronics, and some of my recordings where even solo instruments are either badly miked or recorded in ways that seem to try to spotlight the flute or turn the piano into an instrument that is played with a hammer are just as bad as with any other accurate speaker.

SPECS & PRICING

Frequency response: 20Hz to 40kHz, +/- 2dB

Sensitivity: 85.5dB at 1 meter with 2.83 volt input

Recommended amplifier power: 50Wpc to 200Wpc

Subwoofer amplifier: 400 watts

Impedance: 6 ohms nominal, 4 ohms minimum

Crossover: 100Hz, 600Hz, 5000Hz and adjustable H.F., 6dB per octave

Dimensions: 14" x 44" x 20"
Weight: 182 pounds net, 225 gross (each)

Price: \$24,000 (standard finish)

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At the same time, male and female voice are consistently accurate without any of the problems with the sibilants or upper registers of tenor or soprano voices, or any chestiness in lower-pitched voices, that some speakers add to recordings. Moreover, the 5A Carbons are exceptional with opera and large choral works as well as solo voice. I do prefer the expansive soundstage you get with line source and larger speakers, but I have not heard a more accurate mix of imaging, timbre, and detail in recordings of the most demanding passage of Wagner, or the more demanding vocal passages in Mahler's Eighth Symphony.

The same is true of the sound of both massed and solo strings, of harpsichord, and complex brass and woodwinds. Again, the 5A Carbons are not forgiving, but there are none of the audible problems in the upper midrange in the way of sounds you do not hear live or that are not on the recording. This is particularly important with modern SACD recordings and high-resolution digital downloads. Even a minor amount of harshness, compression, or loss of dynamic detail is far more audible, and can sometimes partially mask the improvement in really good recordings of this type. The 5A Carbon opens them up, rather than limits them.

Features that Minimize Room Interactions in the Treble and Midrange

I should note for those that are not familiar with the earlier Vandersteen 5 and 5A, that you can normally get the 5A Carbon's outstanding performance in the treble and midrange without having to use extensive room treatment. The 5A Carbon limits dispersion in ways that reduce sidewall, other wall, and ceiling reflections at the listening position. It also reduces floor reflection—for anyone still trying to use wood, tile, or marble as a substitute for a thick carpet and pad.

This does require careful setup, and the use of washers in the foot spikes to precisely aim the treble and midrange at the listening-position height in the ways set out in the owner's manual. The treble and midrange drivers have a focal point plus or minus three inches to accommodate listeners of different heights, but you need to use the right number of washers to get just the right tilt for your own listening distance. Not enough tilt and the speakers will sound forward because the tweeter frequencies arrive first. Too much tilt and they will lack the proper energy and sound slow. It also means that the high frequencies diminish if you stand up, although this minimizes high-frequency smear from the ceiling at the listening position.

The speaker's horizontal dispersion is much broader, however, and this means that the Vandersteen 5A Carbons present the same problems as any other speakers that are not dipoles. They need to be kept away from the sidewalls or they will need some form of absorbing material to keep the resulting reflections from interfering with detail and hardening the sound. I place them along the long wall of my listening room, and I find that I have little practical need for room treatment to deal with reflections. Moreover, I depart from the standard toe-in recommendations and aim the speakers so each crosses to the left or right of the listening position. This gives up some imaging detail, but it expands the listening position so several people can hear a good soundstage.

Like the earlier 5 and 5A, the 5A Carbon also has a rear-firing tweeter that can compensate for overdamped rooms and slightly expand the apparent soundstage. I used a minimal amount of such energy with the 5A, but did not use it with the 5A Carbon. This, however, is a matter of taste and the good thing about this feature is there is an array of rear-panel controls to adjust the frequency and intensity of such energy. By all means experiment.

Getting the Best of the Bass

What is even more important in minimizing room interactions, however, is that the improvements in the midrange and treble of the 5A Carbon blend so well with the exceptional bass provided by the earlier model 5 and 5A (and Vandersteen Quattro and Model 7). I keep hoping for digital solutions, or the perfect sound trap, to automatically deal with the mountain range of peaks and valleys in bass response below 250Hz that is inevitable in any real-world listening room, and that will allow me to get the best bass from the best location for the best midrange, treble, and soundstage performance. I also keep hoping for some magic solution to dealing with room reflections in the midrange and treble, and for dealing with the impact of room surfaces on the upper-octave energy a speaker delivers in a given room.

The Vandersteen is not "magic," but it does have design features that deal with these problems in the bass in ways that sound more musically realistic than any combination of digital correction and/or room absorbers that I have heard to date. Like the Vandersteen 5 and 5A, the 5A Carbons mount a 7-inch woofer above the subwoofer enclosure in a resistively loaded transmission line. Both this driver and the subwoofer driver use precision-formed magnet assemblies with copper Faraday rings on the pole pieces to reduce magnetic distortion and maximize linear excursion. Heavy-duty die-cast metal baskets provide superior rigidity.

The 5A Carbon uses a 12-inch subwoofer assembly mounted horizontally in the bottom of the enclosure, in a push-pull design with a powerful magnet on either side of the aluminum cone. Each magnet can provide more than an inch of linear excursion, and there are dual magnet assemblies and two voice coils wound on either end of a single common former that runs through the driver from magnet to magnet. They are driven by a 400-watt amplifier that in practice produces far more bass energy than the more powerful amps in other subwoofers, and can deal with even the most excessive rock, organ, and synthesizer music as well as the sound effects in a home-theater system.

While the 5A Carbon enclosure cannot match the enclosure in the Model 7 in reducing every aspect of vibration and bass coloration, it does provide exceptional bass while still providing midrange and upper-octave performance with a minimum of early reflections and edge diffraction. The helps ensure that the midbass and upper bass blend with the midrange in ways that produce a level of natural detail and musical realism with jazz and real-world symphonic music, and are equally natural with bass, cello, and piano played as solo instruments and in small ensembles. I've only heard a few much larger speakers with the ability to so clearly go down to 30Hz and below without doubling or coloration, but the real merit is the flat response from about 45Hz up—where almost all of the real world bass

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occurs and where you want to hear the frequency of the music, not the frequency the speaker wants to provide.

As was the case in the 5A, there is natural detail, control, and apparent “speed” equal to that of the best woofer columns and room-filling massive designs. This is not a speaker with “small” or limited bass or that substitutes bass energy for musical realism, and there is also a “Q” control that allows you to ensure you get the best of these feature in your system. A low “Q” sounds tight and controlled. A high Q produces a full, warm bass with more energy in the most audible bass range.

Dealing with Room Interactions

This, however, is only part of the story in dealing with most critical problems in room interaction. The subwoofer amplifier has an eleven-band equalizer that provides boost or cut at frequencies centered around 20Hz, 24Hz, 30Hz, 36Hz, 42Hz, 50Hz, 60Hz, 72Hz, 84Hz, 100Hz, and 120Hz. Setting the equalizer is best done by your dealer, although the instructions in the Model 5A Carbon handbook give you a reasonable chance of doing it yourself using warble tones or a Vandersteen test disc and the analog version of the RadioShack SPL meter. Getting this right, however, requires experience in dealing with a wide range of rooms and knowing when to stop. A good dealer will have this experience. It will take you and a friend several tries at a minimum to get it right, and the controls do not need to be readjusted unless you change speaker placement or listening position. The goal is not to achieve perfectly flat response as indicated by the SPL meter. Rather, you want to bring down the highest peaks and bring up the lowest troughs within a 3–5dB range. Once the 5A Carbon is properly set up, however, I believe you will hear bass of a quality most audiophiles have never heard in their homes regardless of cost, and you will have a remarkable ability to put your speaker in the best listening position for the midrange, treble, and soundstage.

The proper adjustment of these eleven equalizer settings really pays off in sound quality. Getting rid of the worst dips and peaks in bass response makes instruments sound far more natural and means you can really hear the bottom organ notes and synthesizer as well as every nuance in electric guitar. There is no hint of one-note bass, a dominant turning point in bass response, or bass smear. The soundstage is more natural in the lower midrange and upper bass, and more coherent.

Compatibility

I don't have a lot of set-up and system-interface tips beyond the fact you really need to pay attention to the manual's advice about features, and charm your dealer into a long set-up session to calibrate the bass.

The 5A Carbon has a nominal 8-ohm impedance, and the use of a powered subwoofer makes it easy to drive—even with amps in the 40W range. A pair of Pass XA160.5 Class A amps provides far more power than is necessary, as does the Cary CAD 120S Mark II in the 80Wpc triode mode.

I should note, however, that the Vandersteen 5A Carbons show their best bi-wired, and do use unique terminal strips that require relatively small spade lugs. The line-level filter that fits between your preamplifier and power amplifier costs \$995 for balanced inputs and outputs, and \$895 for the single-ended version. This

filter rolls off the bass driving your power amplifier; flat response is restored in the 5A Carbon's integral woofer amplifier.

Summing Up

The Vandersteen 5A Carbon is one of the best speakers I have heard, as well as one of the most practical. I would definitely short-list it if you can afford it, and I'd make an upgrade a critical priority if I owned an earlier Model 5 or 5A and were wealthy enough. My listening to the Model 5A Carbons reinforces the merits of the Model 7 in Robert Harley's October, 2010 review, and I envy those of you who can afford the Model 7. As for me, I'm excited enough about the 5A Carbons to make them my reference speakers, and everyone who has come by my home to listen has had the same favorable reaction—including some dealers and my very jaundiced sons and daughter.

This doesn't just come through in listening to music. Speaking as a reviewer, I have rarely found a speaker that made it easier to hear the differences in cartridges, digital front ends, electronics, and the production values in recordings without favoring any one approach over the others. I was recently comparing the top-of-the-line SoundSmith and Grado cartridges with digital recordings of the same performance, and it was striking how clearly the differences came through in ways where the musical advantage of each cartridge became clearer, along with the mix of differences and similarities in analog-versus-digital reproduction.

I do want to stress, however, that this remains an extraordinarily competitive field and no one approach to speaker design is correct or best. I use a pair of Quad 2905s and a pair of Legacy Focus SEs as additional references and each has its own balance of special merits. The new Magnepan 3.7s offers tremendous sound quality for the money at a very different price point. So do the less expensive models in the Vandersteen line, as well as those from too many other manufacturers to list. The hunt goes on.... **tas**

