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Floor Loudspeaker Reviews

Infinity Servo-Statik 1 loudspeaker

By J. Gordon Holt • Posted: Nov 25, 1996

An equipment reviewer for one of the consumer hi-fi magazines once confided to a manufacturer that he found it hard to like electrostatics because of the kind of people who usually like electrostatics. His implication—that certain kinds of people gravitate towards certain kinds of sound—is an interesting thought, and one that might bear some further investigation. But there is no questioning the fact that electrostatic speakers in general *do* have a particular kind of sound, that might be characterized as "polite."



It could, in fact, be said with some truth that, if you wanted close-up, high-powered sound, you chose a good horn system or a similarly inclined cone type, and that if you preferred a more distant listening perspective, with the more subtle attributes of detail and transparency, you opted for electrostatics.

Now, this general rule no longer holds true; the Infinity Servo-Statik 1 is what could be called an electrostatic for people who have never liked electrostatics.

The SS-1 is appallingly expensive. The basic speaker system, consisting of two electrostatic panels, a bass "commode," and a combined electronic crossover and bass amplifier (100W RMS) costs \$2000, and that's only for starters. (On top of that you need *two* power amplifiers—a very high-powered unit for the midrange electrostatics (Infinity recommends the Crown DC-300, at \$685), and a more modestly-powered but equally distortion-free amp for the tweeters. This pushes the total price up to around \$3000, which ain't peanuts.

Each electrostatic panel is about 28" by 36" by 7", and contains two fairly large midrange radiators and a narrow, vertically oriented tweeter radiator. Each section is fed by its own amplifier, via the electronic crossover unit. The crossover cabinet also includes a separate 100W amplifier that feeds a blended-bass signal (below 100Hz) to the system's bass speaker. The woofer, a massive 18" cone unit facing downwards from the bottom of a 2' cubic enclosure, has a special sensing coil coincident with its main voice-coil. The electrical impulses generated by the sensing coil are fed back to the bass amplifier, and any differences between the fed-back signal and the program signal are used to provide a correction to force the cone to follow more accurately the input signal. Hence, the "servo" designation.

The system's midrange gain is fixed. The bass and treble balance are adjustable relative to this via slider controls on the crossover.

At the back of the crossover is a slide switch marked Tri-Amp and Bi-Amp. This is normally used in the Tri-Amp position, but the Bi-Amp setting is there to allow the bass speaker and crossover to be used to fill in the bottom of any other "full-range" system whose owner would like a bit more sub-bass. Since deep-bass response is the major weakness of the KLH Nine electrostatic system, we decided to test this with the SS-1's bass channel, as well as testing the entire SS-1 system.

Our sample SS-1 was a fairly early-production unit, but was supposed to be representative, of current production. Since we already had our Model Nine system set up in the main listening room, our first move was to add the SS-1's crossover (Bi-Amp setting) and bass speaker to the KLH Nine setup. The driving amplifier for the Nine was the Crown DC-300, which we had found to be ideal for the purpose.

The results were not altogether pleasing. Yes, the low end was improved beyond all expectation, and the 100Hz crossover from the Nine allowed it to put out considerably higher listening levels without strain. But the high end was noticeably hard and zippy in comparison with that of the Nine fed "straight," without passing the signal through the Servo-Statik crossover.

This was not a matter of high-end rise. A frequency response check showed the crossover's high-end response to be extremely flat. It sounded very much like harmonic distortion, yet we could not measure any distortion at all through the crossover. (Admittedly, our distortion meter's residual reading is around 0.08%, which would normally show up any audible distortion in tube equipment but is apparently not sensitive enough to give valid readings from solid-state components.)

We contacted Infinity about this, and were told that everything that had been sent to us for testing was "normal production," except that some of the crossover networks had been made using a different brand of integrated circuit from the ones normally used. We were assured that this couldn't be causing the "problem," but just to be on the safe side, we were asked to try one of the crossovers with the usual ICs in it.

It did make a difference—a dramatic difference. There was still a very slight tendency for the sound to be harder through the crossover than without the crossover, but the overall gain in sound quality when using the SS-1 bass speaker with the Nine more than compensated for this, in our opinion. The Nine sounded huge, rich, and stunningly realistic, and the bass speaker's contribution fully complemented the Nine's usual extraordinary tightness and detail.

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Infinity sells the bass speaker and crossover for \$800, so this plus one Model Nine system would total just a shade under \$2000. Two complements of KLH Nines (four panels) will total about \$2300 and, although they'll have much deeper and fuller low end than a single Nine, they still won't produce the awesomely deep bottom of the single-Nine-plus-SS-1-bass. On the other hand, the two Nines by themselves will not be subject to the subtle zippiness that is added by the SS-1 crossover.

Nonetheless, there is another advantage in using the SS-1 bass speaker: It makes it easier to obtain smooth, extended low end from the system, because bass propagation need never be compromised in order to obtain the optimum imaging and center fill from the panels. These can be placed optimally, and the bass commode can then be located wherever *it* does the best job. In general, the smaller the room, the more critical is likely to be the location of the bass commode, but considerable experimentation may be required in any room in order to zero in on the best spot. We noticed, for instance, that in our moderately large listening room, the bass commode's response below about 50Hz remained relatively constant regardless of where it was placed, but that the upper range of the woofer was significantly affected by placement.

The problem was not one of an excess of this mid-bass range but a deficiency of it, which impaired the "fullness" of the sound.

This mid-bass weakness (when it occurred) could be easily corrected by means of the bass balance control on the crossover unit, but since this also increased the stuff below 50Hz, the result was a rather sodden, somewhat bottom-heavy balance on any program material that *had* deep bass in it. Further experimentation with room placements enabled us to find a spot where the entire bass range was subjectively flat, enabling the bass balance control to be run at a lower setting for adequate mid-bass, while still retaining the deep-bass range.

In this particular location in our listening room, oscillator sweeps showed the system's low end to be audibly flat down to a bit below 30Hz, with what we judged to be usable (?) response down to an astounding 18Hz—by far the deepest bass we have ever heard reproduced. Actually, "heard" is not quite the word for it; one feels 18Hz through the floor and the viscera, and one hears only the rattling of objects in the room that have never been rattled before.

Low-end response like this may seem academic when most commercial recordings these days have their low end rolled off below 40 or 50Hz, but our ears told us that there was a marked improvement in the bass tightness and detail, even from material that didn't plumb the extreme depths.

Maybe it's the old story about the 200mph automobile that just "coasts along" at 50mph, or maybe there is actually deeper stuff on most discs than we've been led to believe. After all, discs are *rolled* off, not cut off, so a loudspeaker that doesn't add its own rolloff will naturally reproduce more of the energy below the rolloff point than one that does (footnote 1).

We mention this business about the bass commode's placement because, until this *is* placed for smooth low end, it is almost impossible to adjust the SS-1 system for what sounds like good bass balance on most program material. If one part of the bass range is depressed below another, some recordings will seem to have too much bass and others not enough, and one will be forever readjusting the bass-balance control as though it is a tone control, and no recording will yield really smooth low end.

The same thing applies, although to a lesser extent, to the placement of the electrostatic panels. As Infinity points out in their (rather skimpy) instruction booklet, the SS-1's panels can be placed closer to the rear walls than is normally possible with full-range electrostatics, because there is no need to worry about cancellation of low frequencies—these are handled by the separate bass commode. But with any speakers that radiate from both front and back, the wall behind them can affect their sound according to its reflective properties. A hard, bare wall will make the sound brighter, while heavy drapes on the rear wall will soften the sound appreciably.

When using the Infinity panels, the Treble control on the crossover can help to straighten things out, but not completely, because it cannot offset an overall rising or falling tendency with increasing frequency. The best it can do is give an average correction. while putting a gentle step in the response at 1.5kHz crossover point.

On the other hand, some reflection from the rear wall may be needed, to provide the best stereo imaging of which the system is capable. In the Infinity panels, the narrow tweeter strips have very broad, smooth dispersion, but the wider midrange elements, with the gap between them (occupied by the tweeter), exhibit a small amount of phase-interference cancellation, producing slight "in-and-out" effects at upper-midrange frequencies as one moves across the area in front of the panels, and also causing a mild impairment of stereo imaging. Both can be offset to a great extent by augmenting the frontal radiation by reflections from the rear wall.

Footnote 1: It is of interest to American record buyers that the English magazine *Hi-Fi News* recently published a list of discs that contained low-end material down to as low as 26Hz. Most of the discs are available only in England, but they can be purchased by mail from some of the firms that advertise in English hi-fi publications.

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Again, experimentation is very much in order. Infinity's suggestions for panel placement are just that: suggestions. Try placing the panels various distances from the rear wall and different distances apart, and use whatever sounds best with a representative sampling of program material.

For our tests of the complete Servo-Statik 1 system, we used the Crown DC-300 for the midrange electrostatics, and started with the Crown D-40 on the tweeters. Both power amplifiers were operated with their own input gain controls full-up at all times. The bass commode was left in its previous position in the room, and about four hours of experimentation resulted in a panel placement that seemed optimum to us. The crossover level controls were set to provide what we felt to be the most natural balance from most program material.

During this initial balancing-out procedure, we observed two subtle but persistent colorations from the panels. One sounded like a broad response hump at around 1kHz, the other sounded like a narrower one at around 8kHz, and both were judged to be very small in actual magnitude. The 1kHz one was clearly audible with the tweeters turned off, and although correct mid/upper balance caused it to recede into the background, it remained faintly audible on white (pink?) noise and was no doubt contributing something, however subtle, to the system's overall sound.

The 8kHz one also tended to disappear when the balance controls seemed properly adjusted, but it too remained faintly audible and may have caused some of the slight steeliness we observed subsequently in massed-violin sound.

To a listener accustomed to the KLH Nine, the most immediately obvious characteristic of the SS-1 was its closeness. The Nine places sounds slightly farther away than they were recorded, producing from most symphonic recordings a richness and warmth that one normally associates with a moderately distant seat in the concert hall.

The SS-1 has what we would judge to be a more neutral perspective, so that closely-miked recordings sound close-up, distantly-miked recordings sound distant but not remote.

As mentioned earlier, the KLH (properly installed) is what could be called a "polite"-sounding speaker, and is almost incapable of sounding raw or vulgar. The SS-1, by comparison, seemed better able to convey the actual "flavor" of the music, sounding rich and sweet or snarly and aggressive depending on the music itself.

Probably because of its closer sound, the SS-1 seems to reproduce noticeably more inner detail in the sound than the Nine, although it is arguable whether or not the enhanced audibility of squeaking chairs and grunting cellists adds anything of musical worth to the reproduction. That it does add realism is however beyond question.

The SS-1's incredible detail, though, carries with it a distinct liability: The system reproduces the distortion fed to it with even more merciless clarity than does the Nine. Since it does not sweeten up the high end, the power amplifier used to drive its tweeters is a crucial factor in the system's sound. Most solid-state amplifiers have a more-or-less hard sound, and these the SS-1 does *not* need. The Crown D-40, which we used for most of our tests, has less hardness than most, and was judged to work quite satisfactorily. Since, however, practically all recordings have some characteristic hardness of their own, we feel that listeners who like live string tone may prefer to use a treble amplifier with even less of this quality than the D-40. We have not as yet found a solid-state unit of appropriate power rating that really fills the bill—we're still looking—but we did find that the old, tubed Dynaco Stereo 70 is ideal for the purpose, if it doesn't offend you to sully your solid-state system with tubes. Oddly, the Stereo 120, which sounds so touch better than the Stereo 70 on most speakers, did not seem to work as well as the Crown D-40 on the SS-1's tweeters.

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Generally, the SS-1's sound could be likened to that of a large horn-type system, in that brasses were superbly reproduced and the sound had some of that "authoritarian" quality that makes you sit up and take notice.

It also had another quality that we have noticed in large horn systems: it seemed to produce absolutely astounding dynamic range from music that should indeed have very wide dynamics. We suspect that this is because the fortissimo passages in large-scale musical works are comprised largely of energy in the so-called "presence" range (2-5kHz), where many modern direct-radiator speaker systems tend to be a shade deficient.

Outside of these two aspects, though, the resemblance between the SS-1 and a horn-type system ceases, for the SS-1 had very much wider and smoother response than we have ever heard from any horn system. The only conceivable advantage that a horn-type system could offer would be higher efficiency.

We do not know how much power it would take to overload the SS-1's midrange panels (its least-efficient element), but there were times when our DC-300 was clipping at listening levels below those obtainable from a large horn system at about 1/100 the input power. Nonetheless, with the DC-300 we were able to reproduce in a fairly large living room the kinds of levels one might hear from a Row-M seat in the concert hall, although it was not possible to reproduce piano at anything approaching actual in-the-room volume, if you should happen to want to do so.

We would estimate the SS-1's efficiency to be around ½ of 1%, which makes it a bit less efficient than an AR-3 (footnote 2).

We mentioned the SS-1's ability to reproduce brass instruments, not because it does less well on other instruments but because it does them so much more justice than any other American electrostatic we have heard. In fact, it does not seem to favor any instruments although, as mentioned, the amplifier used to drive the treble elements will determine to a great extent how the system will reproduce the sound of loud, massed-violin passages.

All comparisons aside, though, the word that best describes the sound of the Infinity SS-1 on large-scale choral or orchestral music is "stupendous." It is a long time since anything we have heard has, literally given us goose bumps, but the SS-1 did it time and time again, until we found ourselves re-listening to recordings we haven't pulled from the shelves for years, just to enjoy the sound of them.

In short, we feel the Infinity Servo-Statik 1 to be one of the two best home- type loudspeakers that money can buy, and the other isn't a dynamic system either: it is four KLH Nine panels. They are priced competitively with one another, but there is little to compare sonically. They sound quite different, yet both are unsurpassed in realism of a certain kind, the Infinity for a neutral perspective, the Nines for a more distant perspective.

After much anguished soul-searching and vacillation, we finally concluded that we preferred the SS-1 on 90% of recorded material. We would have bought our test sample had we been able to scrape up the necessary bread, but finally had to let it go. We still feel rather as though a member of the family has passed away.

Footnote 2: Since this was written, we heard an SS-1 employing new, 8dB more-sensitive midrange panels, which allow one to use a lower-powered amp on the midrange or to get absolutely ear-shattering levels from the system with a midrange amp like the DC-300. Several people who have listened to the system with the new panels for some time have reported that they seem to provide better woofer/tweeter blending than the original ones, but we were unable to hear the difference on a brief listen to them.

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Infinity Servo-Statik 1 loudspeaker Manufacturer's Comment

Manufacturer's Comment

Thank you for the extremely complimentary and comprehensive report on the Servo-Statik 1. We feel it is for the most part accurate, but a few points should be mentioned.

The Servo-Statik 1 panels are designed to utilize the reflections from the rear, and for best results should be placed 2-3' from the rear wall and at least 1' off the floor. This eliminates the slight "phase interference" phenomenon noted by the reviewer, and dramatically enhances the stereo imaging.

The peaks reported at 1kHz and at 8kHz must be considered debatable. There *is* a very broad peak centered around 850Hz, but of only about 1.5dB in magnitude. We have never observed a peak at 8kHz. The frequency response of the system is ± 1.5 dB from below 20Hz to above 20kHz, so any peak or dip within that range should not be of any real sonic significance.

We assume that Mr. Holt had tongue in cheek when he "complained" about hearing the "squeaking of chairs" and "grunting of cellists." Obviously, if these things are on the disc, and are reproduced clearly by the SS-1, then subtle musical nuances will be reproduced just as clearly.

The "subtle zippiness" at the high end when going through the electronic crossover must also be termed debatable. With so much variance between the sounds of various power amplifiers, preamplifiers, and cartridges, it is difficult to know which may be responsible for "zippiness."

Even though the reviewer observed that the electronic crossover did seem to cause a subtle change in sound, it must be emphasized that the insertion of the crossover (with its gain of 2 and 0.005% distortion) halves the necessary output signal from the preamp. Since this reduction of the preamplifier's output signal will reduce the system's distortion, one would *expect* to find a difference in sound. Distortion reduction and improved transient response *should* increase the sharpness and clarity of the sound.

This subjective argument is also germane to discussions of tube *vs* transistor power amplifiers. There is no denying that early transistor amplifiers had excessive crossover distortion, resulting in unpleasantly hard sound. But we do not feel that the best of the current-model transistor amps exhibit hardness as such. They are, in fact, truer reproducers of the original signal than the tube amplifiers of yesteryear.

Along with their very exciting reproduction of castanets, bells, triangle, snare drums, etc.,—hard transients—comes the liability of some "hardness" on top *in comparison with tube amplifiers*. The fact that tube amplifiers could never reproduce these hard transients as accurately, and were never capable of as much sonic detail as a good transistor amp, makes it clear that their "sweetness" was in fact a result of certain inherent deficiencies in the tube units, regardless of how "pleasant" they may have sounded.

We think it all boils down to the point made in the review: That improved transparency and detail in a loudspeaker carries the "liability" that any kind of distortion fed into the system is exposed with merciless clarity. We suspect that the "zippiness" has always been present in the program material, but was masked until recently. Whether the sound of the SS-1 does, in fact, exhibit slight zippiness or sublime sweetness is a moot point within the framework of our knowledge about the program material available to us. We at Infinity have not observed any hardness or zippiness when directly comparing first-generation master tapes with the original performance, including massed strings.

One final remark about suitable simplifiers: The Crown DC-300 (in the Hysteresis mode) is of course a superb driver for the midrange, but there are many other fine amplifiers available with the requisite power and stability, including the Marantz 16B, the SAE Mk.VIII, and the McIntosh 2105.—

Arnie Nudell, Infinity

Reviewer's Addendum:

We did not find the optimum panel location in our listening room to be as recommended. We still advise experimenting.

The "complaint" was indeed tongue-in-cheek. We *like* to be able to hear everything that's there.

The subtle (and it was) change in sound when the crossover was inserted could not have been due to a reduction in preamp distortion, because it was observed when no preamp was used. The output from a tape recorder was fed through a purely passive volume control (500 ohms, to terminate the recorder's transformer outputs) and then into the crossover unit. With the crossover out of circuit, the only thing that was changed was the setting of that control.—J. Gordon Holt

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Infinity Servo-Statik 1 loudspeaker J. Gordon Holt Summer 1975

J. Gordon Holt returned to the Servo-Statik in the Summer of 1975 (Vol.3 No.9):

We have our own corollary to Murphy's law, which we read off like the Rights of the Accused to every manufacturer who sends us equipment for testing. It goes: "If one sample out of 50 off the production line is to become defective immediately after passing final inspection, that will be the one sent to *Stereophile* for testing.

In April 1975, Murphy moved in to stay. Our preproduction prototypes of the Infinity Servo-Statik 1A speaker system arrived, having been previously tested for only three months. It wasn't enough. Within the first three days, the electronic crossover started cutting off the tweeter in one channel. Obviously a simple case of a defective part on a plug-in circuit board, right? Right.

Except that when the new, production-type board arrived, it kept popping fuses on the crossover. Seems it was not quite like the pre-production one, and was shorting to a mounting bracket which, in the production crossover, had been moved so as not to short out the new board. We fixed that with insulating tape, but by then the rectifier had been so over-taxed that it let go.

Then the electrostatic speaker power supplies started popping. And so did two replacement circuit boards. Next, we lost two of the Infinity midrange panels, and somewhere in between our first sample of the switching amplifier popped out.

The full report on the Infinity SS-1A scheduled for this issue has therefore been postponed...For the nonce, though, we can report the following:

Unquestionably, the SS-1A's weakest point is its stereo imaging. This is very good, but is not outstanding. Nonetheless, the system is one of the two most accurate reproducers that it has been our good fortune to hear. Like other dipole radiators, it is very critical of room placement. Improper positioning can cause midrange colorations (nasality, honkiness, etc.) and imperfect "meshing" of the lower-range response of the panels with the upper range of the single-box woofer. Similarly, improper positioning of the woofer can cause excessive, inadequate, or irregular bass response. But the advantage of having the woofer separate from the upper-range speakers is that all of them can be located for optimal, no-compromise performance if you have the patience (and know-how) to do so.

Balance settings on the electronic crossover are critical, too. The tendency is for most dealers to set both the bass and treble too high, causing

heaviness and hardness. Finally, these speakers absolutely *must* be driven by the best available electronics, and that implies either top-notch tube stuff or Infinity's switching amplifier. The preamp *should* be an Audio Research SP3A-1, but a good Dyna PAT-5 does a very passable job.

More particulars in the next issue. Meanwhile, this has become our standard by which other reproducers (and the original tapes that we make) will be judged for the foreseeable future.

Infinity's first Servo-Statik system, the SS-1, gained a reputation (justified or not) for undependability, and our experience with our pre-production SS-1A did little to undermine that reputation. One tweeter channel in the crossover was intermittent, then the crossover started popping fuses and had to be replaced. The other has worked fine ever since. Two power supply boards in one electrostatic unit broke down, due to a set of filter capacitors that were inadequate for the task despite conservative voltage ratings. The replacements, with twice the rating, are working fine. One power transformer in the other electrostatic developed a short through its output wire insulation to the end bell. The replacement transformer—current production—had a grommet in the end bell to prevent that from happening again. Finally, two of the midrange electrostatic panels split, and these had to be replaced.

Our SS-1A now seems to be doing fine—nothing has failed for over 2 months—but only time will tell how other samples fare in the field. (Electrostatics have to be less dependable than dynamic speakers, by virtue of their powering circuitry. But that's a risk we will gladly swap for the quality of sound that can come from electrostatics.)

Addendum: Several weeks after our SS-1A arrived, we received our finalized FMI J-Modular speakers, and although we are still very much impressed with the SS-1A, we must now report that the FMI is in the same league as the Infinity. The Infinity is rather more versatile, in that it can be made to operate optimally in a wider variety of acoustical environments, and it has noticeably better middle-range focus and "snap," but it no longer has the Class-A group to itself. This must now be shared with the FMI, which is reported on elsewhere in this issue.

There is, incidentally, a way you can determine whether your listening room is bright, soft, or neutral. Read our "Recommended Components" Notes for some of the loudspeakers you have owned, and compare the description of their sound with your own reaction to them. If you have found that the speakers in question sound brighter or shriller than our notes would indicate, yours is probably a bright room. If the opposite is the case, you probably have an acoustically dull room, and will thus probably prefer the Infinity to the J-Mods. In a middle-of-the-road case, the Js tend to be a little polite, the SS-1A a little more forward and alive.—J. Gordon Holt

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MEET THE TWINS



Floor Loudspeaker Reviews

Infinity Servo-Statik 1 loudspeaker J. Gordon Holt October 1975

J. Gordon Holt wrote again about the Servo-Statik 1A in October 1975 (Vol.3 No.10):

For the benefit of readers who missed our last issue, this speaker system and the FMI J-Modular (see p.4 in this issue) are, in our judgement, the most accurate loudspeakers currently available, bar none. The SS-1A is substantially more costly—more than twice so—and must be biamplified. (The biamping is for the mid and high-range electrostatics; the 18" woofer is driven by its own 150W solid-state amplifier.) The FMI can be driven by a single amp. And then there is the question of dependability.

As we mentioned last time, our sample SS-1A was pre-production, and a few parts therein failed during the first couple of weeks of use. (As did just about everything this summer!) That, plus the bad reputation gained by the previous-model Servo-Statik (the SS-1) and some persistent reports of continuing problems with midrange speaker modules, has made many buyers leary of getting committed to the tune of \$4000+ with an SS-1A. So we should report that, as of now, our SS-1A has been working without a falter for three months, which is a good sign.

Experience has shown that, if a component is going to fail, it will usually do so within the first week of operation, occasionally within the first month, and rarely after that until several years have elapsed. Nonetheless, indications are that breakdowns of midrange panels in new SS-1As are still rather more common than they should be, so the system may not yet have been debugged.

It is, however, *inevitable* that an electrostatic will be less dependable in the long run than a typical speaker system, simply because it is at the short end of the laws of probability. It has far more component parts than a conventional system, and many of them operate at high voltages, both of which factors increase the probability of trouble. High voltage alone is not necessarily a liability, as witness the millions of neon signs in the US that are still working after 10 or more years.

We have not, as a matter of fact, heard of a single power-supply breakdown in any production-model Servo-Statik 1A system.) If a problem does develop in an SS-1A, it is more likely to be in the system's—electronic crossover unit, which has far more parts although operating at lower voltages. Most of the circuitry in the crossover is on plug-in boards, so a reasonably adept audiophile could install a new one without having to pay his dealer for repair service.

We suppose what the dependability question all boils down to is: Is it worth the higher risk of a component failure to enjoy the best possible sound

when the system is working? The answer to that will depend on just how high that risk actually is, which is something that cannot be determined until the SS-1A has been around for a few years.

One of the odd things we have observed for many years but have tried not to think too much about is how it is possible for two top-rated speaker systems to sound so different. The implication thereof would seem to be that one of them is "right" and the other "wrong," or—worse—that both are wrong. It now begins to look as though the third conclusion was the correct one, for not only are the SS-1A and the FMI J-Modular better—*ie*, more natural—reproducers than any systems we have heard previously, they are more *alike*. The fact that they still don't sound the same raises the same old question, but their similarity—under certain conditions which we'll mention subsequently—suggests that the Holy Grail of high fidelity, Ultimate Perfection, may not be all that far over the horizon.

Before we go into any further detail about the sound of the SS-1A, a word about associated components. In our last issue, we climbed out on a limb with the statement that the best possible reproduction of sound today was from the best tubed components. The SS-1A was one of the speakers that led us to that conclusion. We tried every solid-state amplifier in the house, including Infinity's own class-D switching amplifier, as driving amps for the tweeters and midrange panels of the SS-1A, and among the four pairs of educated ears that collaborate on our listen-ins, *all* felt the tubed amplifiers did the best job of reproducing that exceedingly delicate balance between sweetness and sharpness that is the sound of live music.

We tried Ampzilla, the Dyna Stereo 400, the Epicure One, Infinity's amp, and the tubed Audio Research D-76A and Paoli 60M. We listened to original tapes made with a variety of mikes and in different acoustical environments, we listened to domestic and imported discs and open-reel tapes, and tried a few experiments involving trying to reproduce the sound of a speaking voice and comparing it with the person standing midway between the speakers. The D-76A won every time, driving both the middle-range and tweeter panels.

The same held true for the preamp. The solid-state units we tried—the Dyna PAT-5, Mark Levinson JC-2, and a couple of preproduction prototypes on hand—were marginally better than the Audio Research SP3A-1 in a couple of ways (different ways for different preamps), but the ARC still maintained more of that delicate musical balance, and the liquidity and roundness, of live music than did any of the others.

What we are driving at is, if you are going to spend \$4000 for an SS-1A, be prepared to spend whatever it will cost you to mate it with the finest tube electronics available. As of now, that means Audio Research, but the picture may change in the future. As a matter of fact, the future may even bring a solid-state amplifier that can beat the ARC's musicality, but for the nonce, the only amplifier that comes close (and has better high end, to boot) is Infinity's switching amp. We still prefer ARC on the middle range, and have mixed feelings about it on the top, but if you need more volume than a pair of D-76As can deliver (up to 105dB cleanly in a 13' by 21' room), for reasons of a larger room or a lust for violence, the Infinity SWAMP is the only other one we recommend. (If you only have one SWAMP on hand, use it on the midrange. It will do fine on the tweeters, but they don't really need more than 50 watts, although they are rated at up to 125.) If cost is any consideration—and it shouldn't be if you can afford the SS-1A to begin with—alternate choices for high-end drivers are the Paolis, a modified Dyna Stereo 70, a Quad 303, and an unmodified Stereo 70, in that order.

Unfortunately, many Infinity dealers are not also Audio Research dealers, which means you may not be able to hear an SS-1A performing at its best in a dealer demo. Many dealers use Ampzilla to drive the tweeters, and while Ampzilla has as sweet a high end as any conventional (*ie*, non-switching, non-FET) solid-state amplifier, it is appreciably harder and drier at the top than a D-76A, and it will not do justice to the system. If your dealer doesn't have ARC stuff and won't let you take an SS-1A home on approval, you'll just have to take our word for how lovely that high end can be!

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Floor Loudspeaker Reviews

Infinity Servo-Statik 1 loudspeaker J. Gordon Holt October 1975 part 2

Another problem we have observed with some Infinity dealers' demos is their tendency to set both the bass and treble controls (on the crossover) up too high, presumably to make a point of the system's phenomenal performance at both ends of the spectrum. The result, all too often, is bass boominess and that sizzly, biting high end that many audiophiles think of as "electrostatic sound." Some SS-1A buyers, too, will tend to fall into this trap, for statistically few audiophiles ever get to hear live, unamplified music, and have no idea just how sparse but tight live bass is, or how sweet but detailed live highs are.

Our advice, if you really want to get out of the SS-1A what it is capable of, is to start with the crossover controls set for what is obviously too little bass and treble, and *live with them* that way for a while. Then, after you have found that *all* recordings sound thin and dull, advance both a little at a time until some recordings sound a bit bass-heavy and some sound a bit thin. That is the correct bass setting. For the treble, the object is to retain softness in the sound of woodwinds strings, yet crispness on hard percussion like triangle and castanet. Achieve that on a statistical majority of recordings, and you've hit the delicate balance.

At this point, you should use a china-marking pencil (or a sliver of gummed paper) to mark the control settings, and should keep the controls there unless, over a period of time, you find yourself consistently using a different setting, at which time, change the mark. What is *most* important is to bear in mind, and keep repeating to yourself, that unless you hear live, unamplified music frequently, your tendency will be to whoop up lows and highs too much, and if you're going to do that, you're an idiot to do it to a \$4000 system that has the capability of being an accurate reproducer! If you just want something that sounds "good" to you, the SS-1A is not a very sensible choice.

We should also lay to rest what, judging by conversations with several subscribers, is a popular misconception about so-called common-bass loudspeaker systems. Infinity claims, as have previous manufacturers of other systems using a single woofer for mixed bass, that the woofer unit can be placed anywhere in the listening room. This, to many people, conjures up images (no pun intended) of the upper ranges of sound coming from the electrostatic panels while the bass drum and bass fiddles come from the far corner or wherever the woofer happens to be placed. When they are told that bass is nondirectional, and that the ear cannot distinguish direction below about 300Hz, the reaction is "Nonsense! I've been to live concerts, and I can hear exactly where the bass instruments are located."

That's true, of course. We can tell the direction from which the sounds of a bass instrument are reaching us but not from its bass frequencies. The

directional cues we hear are from the musical overtones of the instrument—the impact transient of the drum head and the pluckings, bowings and harmonics of the bass strings. We have demonstrated this time and again with previous common-bass systems, and did it several times to unbelievers with the SS-1A. The best location for the SS-1A's bass "commode" in our room turned out to be directly behind the left-hand electrostatic screen where it is not visible from the listening area.

Our "demonstration" involves playing recordings that have bass instruments located at or toward the right side and asking the skeptics to tell us where the bass speaker is located. Without exception, they have been *absolutely certain* it was behind the right screen. Then we show them where it is.

Bear in mind, though, that since our ears can perceive directional cues from frequencies as low as 300Hz, it is necessary to cross over into a spatially separated woofer well below 100Hz, so that frequencies of 300Hz and up are sufficiently attenuated to avoid giving our ears enough directional information to lead them to the woofer. Even with Infinity's 70Hz crossover, there is enough leakthrough of 300Hz information to the woofer to reveal its location when it is placed close to and to one side of the listening area (footnote 3).

Remember also that, at 100Hz the wavelength of a sound is around 10½', which means that placing the woofer about 5' behind (or in front of) the electrostatic screens will cause phase reversal with resulting cancellation of mid bass. If this spacing must be used, the connections to all four sets of electrostatic screens should be reversed (but not interchanged, of course!). The result will be smoother response, but at the expense of some audible delay between fundamentals and their overtones. (With the woofer 10' behind the screens, mid-bass cancellation will not occur but the 100-millisecond delay in low-bass fundamentals is audible as pronounced hangover. Moral: Don't put the woofer more than a couple of feet closer or farther from you than are the upper-range screens.)

It is also argued by some theoreticians that, since bass frequencies have long wavelengths, widely-spaced recording microphones will receive bass signals with a certain amount of phase delay, and this delay will result in sane cancellation of bass if the stereo channels are blended prior to reproduction. This is a harder question to answer, as no research has (to our knowledge) been done on the subject, and our observations were inconclusive. We did notice that, by and large, deep bass from the SS-1A was not quite as prominent as from the FMI J-Modulars (although it was also tighter), but whether that was because of the bass mixing or some other difference between the woofer systems (the Infinity's is, after all, servo-damped) was moot.

Footnote 3: The SS-1A's crossover rate is about 6 dB/octave, and 300Hz is a hair less than two octaves above 70, so 300Hz will be less than 12dB down in level. (A crossover slope only approaches its nominal rate of attenuation; this one would never quite reach 6dB/octave.—J. Gordon Holt

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Floor Loudspeaker Reviews

Infinity Servo-Statik 1 loudspeaker J. Gordon Holt October 1975 part 3

It should also be borne in mind that, in order to limit vertical stylus excursions to a realistic amplitude, commercial recordings have *their* stereo channels blended together at low frequencies, so there is no advantage whatsoever in reproducing them through separate bass speakers. Without resolving the question, then, we can only say that, regardless of how it is done—with one woofer or two—the SS-1A's bass is better, in terms of naturalness and range, than that of any other system we had heard previously, and is comparable to (although not the same as) that of the FMI J-Modular.

Apart from the question of blending, there is one distinct advantage of having a speaker system's bass unit(s) separate from the upper ranges, and that is the ability to place it (or them) for smoothest possible response in a given room, without in any way compromising the locations of the upper-range drivers.

Our main listening room, although perhaps not typical in this respect, has a tendency to suck out the bass range between 45 and 60Hz with some speakers. When it happens, we have to move them farther in toward the room corners, which doesn't always result in optimal performance through the rest of the audio range, so we usually end up having to test those speakers in two locations and combining the results for a report.

With the SS-1A, we were able to locate the upper-range speakers for best overall sound, and then move the bass commode around until we found the spot where it produced the smoothest bottom and the best blending with the screens. No compromise! We emphasize, though, that our room is *not* your room, and that optimum speaker placement in it is optimum for our room only. (This is why we never publish details about where we place loudspeakers; if we did, too many of our readers would interpret it as a recommendation and try to locate their own speakers likewise.)

We repeat: The only way to find the best location for *any* speakers in your room is by experimentation. And in the case of bipolar (two-sided) radiators like the SS-1A panels, room placement can be very critical, which is actually an asset as well as a liability.

Because the sound comes from both the front and—as reflections from the wall—from the rear, there is more than ample opportunity for phase interference to cause partial cancellation of some bands of frequencies and augmentation of others. And since many of the wavelengths involved are right in the musical midrange, the result can be pronounced vowel-like colorations. Consequently, the likelihood of an SS-1A's performing at anywheres near its full capability when first fired up is pretty remote. It took us three weeks of pushing the panels around until we hit on what

seemed to be good locations, and it took another week for us to realize that a certain deficiency of warmth could be cured by some more adjustments in room placement.

And that turned out to be the hidden asset of the system: The ability to "tailor" its sound to produce a desired result in virtually any listening environment. In this respect, the SS-1A proved (as have other bidirectional systems) adaptable to a wider variety of acoustical environments than are most conventional systems. (Incidentally, we recommend using masking tape or something else reasonably permanent to mark the floor at two corners of any speaker unit after a proper location has been found, so it can be returned to the spot if it has to be moved.)

So, how did the SS-1A perform after we finally got through messing around with it? We would describe its sound as mercilessly *accurate*—accurate because it tended to verify sonically the things we knew about tapes that we had made ourselves, and merciless because it revealed every flaw in our recordings and, unfortunately, in most commercial recordings.

On our more successful tapes, and on a precious few commercial recordings, the SS-1A system came about as close to re-creating the illusion of honest-to-God, reach-out-and-touch-it reality as it is possible to come via a commercially available system. The high end, as mentioned previously, had that rare combination of softness on strings and woodwinds that gives every audiophile the initial impression of "no highs," and of sharpness on hard transients and the spiky edge of brasses, which came through as though there was no upper limit at all.

A solo violin tape we made (of the concertmaster of a local orchestra) had that incredible sweetness of a fine violin (which it was) with the most subtle, open, resinous sheen at the top that we have heard reproduced. And the rich, wooden warmth of the sound-box was there, too. The performer (who also happens, atypically, to be a very critical audiophile), declared it to be "my violin sound."

The low end, similarly, seemed to have no limit. No matter how deep the musical (or otherwise) material reproduced, from pipe organ or thunderstorm, there was the feeling that the system could have produced even deeper, more floor-shaking lows if called upon to do so. In fact, there was a practical limit to the low end in our room: Oscillator sweeps revealed that the bottom tapered off rapidly below 23Hz, but things in the room were still rattling (until we moved them) at 16Hz, which is as far down as we can tune our oscillator. There was, as a matter of fact, a slight response *hump* in the room at 28Hz, which did nothing for symphonic music but added a touch more visceral pressure from a few really wide-range organ recordings.

All the more remarkable, then, was the incredible *detail* of the low end. We almost felt we could, as the saying used to go, "count the cycles," and were readily able (on many recordings) to distinguish between bowed double basses and pipe organ pedals. And never before have we been so much aware of the electronic origin of that "heartbeat" at the opening of Pink Floyd's *Dark Side of the Moon*.

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ALL THE MUSIC

Floor Loudspeaker Reviews

Infinity Servo-Statik 1 loudspeaker J. Gordon Holt October 1975 part 4

In short, we were stupefied by the performance of the SS-1A, when reproducing decent material. But with *typical* recordings, we are sorry to have to report that the SS-1A revealed every nuance of what it is that ails most recordings: Steely, sizzly violins, whumpy mid-bass, pinched trombones, advancing and receding woodwinds, excessive closeness and lack of depth, and an overall solid-state hardness which soon had us working (not too successfully) with equalizer and treble control.

We couldn't help but speculate as to what those commercial recordings might have sounded like had the recording studios themselves been set up with monitor speakers as accurate and revealing as these. Considering what they must be using, though, there is some question as to whether many listeners might not be happier either using a cartridge that is more "polite"-sounding than the Decca, or a speaker system which tells more-flattering lies about the program material fed to it.

If you want to hear exactly what a recording actually sounds like, the SS-1A will tell you, but until something is done about commercial recordings in general, maybe you would prefer not to know. Personally, we'll grit our teeth and put up with, in exchange for the privilege of knowing that, when the ultimate recording comes along, the SS-1A will reproduce virtually every iota of it.

The only real weakness of the SS-1A is its stereo imaging. Center fill and imaging stability are not as good as they could be, and there is a slight "Vertical Venetian Blind" effect as we move across the listening area—instrumental locations seem to shift back and forth a bit—but at least there are no treble "hot spots" (as in many systems with electrostatic tweeters), and the system does not tend to make a guitar sound as wide as a grand piano. It reproduces original sizes fairly accurately.

The SS-1A is also—or at least can be, at its best—nearly perfectly neutral in perspective. Its sound tends to be slightly forward (fig.1), as is appropriate for a system that will almost certainly be used in a fairly large listening room, where the listening location will be 8' or more distant. The forwardness serves to place a very closely-miked sound source slightly in front of the system rather than right at it, producing a marked "in-the-room" illusion, but without any of the raucousness normally observed in systems that "project the sound forward. Thus, close-up recordings sound close, while distant ones have a perspective very similar to the actual distance of the microphones from the performers.

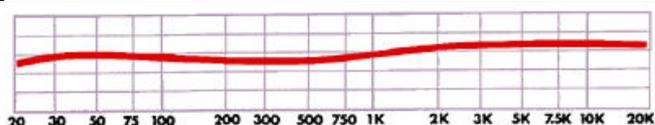


Fig.1 Infinity Servo-Statik 1A, subjective frequency response (5dB/vertical div.).

Under the circumstances, we were not surprised that the SS-1A reproduced depth and perspectives very faithfully, which is one of the things that makes it so revealing of the gross multimiking used for most commercial domestic recordings. Flat recordings sound *very* flat. In addition, the SS-1A has a truly phenomenal transparency which, again, reveals mercilessly any graininess or veiling of the program source.

Blending between the SS-1A's drivers was excellent. No crossover was audible between the tweeters and midrange panels, and the mating of the midrange sections and the woofer was dependent on room placement. We were able to locate things so that not one of our listening group was able to guess (prior to being told) where bass/midrange crossover was taking place.

There is only one other speaker system we have encountered that is really comparable with the SS-1A, and that is the FMI J-Modular. They don't really sound the same—the Js have what we would characterize as a warmer, rounder sound—but at their best, they are actually more alike than dissimilar. Highs are virtually identical, both have about the same ability to reproduce depth and perspective, and while the J's bottom is a shade fatter, the SS-1A's bottom is a shade tauter. And both, under their best conditions, can sound astonishingly realistic. If we were forced to rate them, we would be inclined to give the SS-1A top honors for absolute accuracy, with the qualification that many listeners may find the FMIs a bit easier to live with.

All in all, though, it is our feeling that the SS-1A sets a new standard for performance in a commercial speaker design, and that its only drawback is a direct result of this:

It makes your typical commercial recording sound just as bad as it really is. A sweet-sounding pickup cartridge (like the Denon or Supex) can ameliorate matters, and you can always switch cartridges when playing a really good recording, but if you want to know the unvarnished truth about your program material and—we might add, about the mistracking proclivities of your cartridge—this system can give it to you like none other that we know. But as we said before, don't skimp on the electronics. "Almost as good as the best tubed stuff" isn't going to allow the SS-1A to perform at its best, and if you happen to be one of those souls who have a gut feeling about the inherent superiority of solid-state, and won't pay the price of a pair of switching amps, you would probably do better to investigate another speaker system, because to crud up the top of the SS-1A with the typical solid-state hardness and grit would be a crime against reason.

The only crucial question about the SS-1A at this time is, will it prove to be as durable and as dependable as a \$4000 super-system should be expected to be? The persistent reports of midrange panel failures are not reassuring, even though replacements (when obtained) are easy to install, and our SS-1A has been working steadfastly for several months now. We can only hope, fervently, that the reports are exaggerated or, if not, that Infinity can remedy the situation instantan. It would be most unfortunate were a product as good as this to fizzle out because of one intractable production problem.—J. Gordon Holt

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Floor Loudspeaker Reviews

Infinity Servo-Statik 1 loudspeaker Manufacturer's Comment

Manufacturer's Comment

Editor, your review of the SS-1A is certainly one of the most detailed and complete reviews I have had the pleasure to read. Furthermore, most of your conclusions about the SS-1A itself concur with our own remarkably well. I do however have a few comments concerning some other points in the review.

A) We appreciate your candor and fairness in presenting an admitted sticky situation concerning the midrange modules for the SS-1A. It should be said that, for a period of over three months, we did not ship any of these systems (even facing an enormously overbloated inventory of SS-1A parts). The reason was that we had recently discovered defects in the chemical composition of our grid laminate which would cause subsequent deterioration of the modules. We know at this time that even *some* of the systems in the field would suffer at some time due to this defect.

It must be emphasized at this point that the *total* number of SS-1As shipped into the field before this defect was noticed was under 15 systems. Of these 15, only 3 have gone to consumers, and each of these is operating properly! The balance of the systems are in dealers' showrooms, and some of these were down for a period of time while we were solving this dilemma.

It has been brought to our attention that the word is spreading about SS-1A owners committing acts of violence against their continually failing SS-1As. We can prove that this is only distorted hearsay, with no basis in fact. At the time of this writing, we can state that we have solved the problem and are shipping modules to dealers to render their SS operable. Thank you for being so patient; we really appreciate it.

We now believe we can offer superb reliability on the SS-1A, although as clearly explained by J. Gordon Holt, it will never have the reliability of a few cones in a box. It is *exactly* analogous to a Ferrari being as reliable as a Dodge Dart.

B) The second point I should like to mention is that the switching amplifier JGH had when reviewing the SS-1A was one of the earliest pre-production prototypes. Even this amp, JGH suggests, has a better high end than the D-76A. We agree with the comment that it is a waste of money to buy an SS-1A and not utilize the best associated equipment. It is in this spirit that we suggest that, at this point in our progress on the class-D amplifier, it is the only amplifier that, when used on both midrange and tweeter, makes the SS-1A become totally alive. JGH has been shipped the latest version of the amplifier and will evaluate it in some future issue.

We do agree, however, that the ABC tubed amplifiers do a very fine job indeed. We have not heard the new Vertical-FET power amps or the Stax class-A amp on the SS-1A, but there is indication that these are excellent possibilities. At the time of this writing, it is our finding that there are other preamps that do as good or better a job as the ARC. The ones that I have heard that qualify are Infinity's FET, the Stax FET, Levinson's JC-2, and Thaedra from GAS.

C) The last point I should like to make is about the standing battle between two camps of audiophilia: the pro-Deccas and the anti-Deccas. I must confess I *used* to be among the pro-Decca group—very staunchly. At this point, I am not totally in the anti-Decca camp, either. The Decca cartridge in a Decca arm on a few select records sounds magnificent. However, generally its hot upper midrange and horrible tracking ability make it very tedious on a speaker as revealing as the SS-1A. If you indeed have Decca-itis, as does JGH, then the SS-1A will reveal all those ugly things on most recordings, as suggested in the review.

From our research at Infinity, we really suggest a cartridge like the Denon with a spherical stylus in a very low-mass arm such as the Grace 707 or the Rabco ST-7 'table/arm. This will yield not only very satisfactory results on most records, but also will excite you on the very best discs.—*Arnold Nudell, President, Infinity Systems*

Reviewer's addendum:

Such is the effectiveness of the audio grapevine, we had become convinced that Infinity must have delivered at least 23,000 SS-1As, 22,741 of which had suffered midrange panel failures. We are glad to hear the situation isn't quite that bad, and are even more glad to hear that Infinity feels that they have now solved the problem. Now, only time can tell.

We should add here that, since initial tests of the SS-1A and the FMI J-Modulars (also reviewed in this issue), the Js underwent yet another modification that has obliged us to reassess the relative ratings of the systems. At this time, we must admit that we are undecided as to which of them is actually the more-nearly-perfect reproducer. The final word must wait until the next issue.

As for the Decca pickup/tube amplifier "controversies," we continue to like the Decca, despite its obvious tracking problems (which are, incidentally, more conspicuously noticeable on the SS-1A than on any other system we know of), because it is still the only cartridge we have found whose overall sound duplicates the brightness and aliveness of original tapes. And we still find the best tubed equipment to be more musically natural than any solid-state components we have tested to date.—J. Gordon Holt

Article Continues: [What If You Lose a Midrange Panel?](#) »

Company Info

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Floor Loudspeaker Reviews

Infinity Servo-Statik 1 loudspeaker What If You Lose a Midrange Panel?

Sidebar 1: What If You Lose a Midrange Panel?

Failure of a midrange panel in the SS-1A is an annoyance but by no means a disaster. If you have a mental image of pryotechnics reminiscent of starship Enterprise taking Klingon fire, forget it. Yes, there's 4000 volts DC on those panels, but it is only a static charge, with no more potential for violence than the charge you build up walking on a carpet in dry weather. When a midrange panel goes out, it may cause clicks or distortion in the sound, but in most instances, that's all there is to it. The panel is easily replaced, and you can even continue to use the system until the replacement panel arrives. (The tweeters rarely fail, but the following applies to them too should one of them go out.)

The mid-range panels in the SS-1A are largish flat rectangles, and there are six of them per screen, in two vertical rows of three. The failure of one of them will usually be immediately audible in one of several ways:

- 1) The sound from one stereo channel (only) will become sputtery or shattery at high listening volume, as though one channel of the power amplifier were overloading,
- 2) There will be a series of small but very sharp clicks from one channel, usually occurring at regular intervals,
- 3) One channel, again at high listening levels, will emit a "pop" followed by a sudden temporary loss of level in that channel. If there are clicks or pops involved, you can easily zero in on the bad panel by placing one ear close to the offending screen and moving it around until you locate the click source. Use a spot of white chalk on the front grille (easily vacuumed off later) to mark the spot.

In very rare instances, a midrange panel may fail in such a way as to temporarily disable all the midrange modules in that screen, at which time tracking down the defective panel becomes a bit more of a chore.

Turn off the entire system and unplug the defective screen from its AC supply. (Infinity, incidentally, recommends leaving the screens fired up at all times, to prevent moisture condensation and keep them at full charge.) The rear cover is removeable by four screws. If you have already located the bad panel, disconnect the three terminals fastened to the rear of it. This involves only the removal of three small hex nuts. If all the midrange panels are dead, or drastically down in volume, it will be necessary first to disconnect the outside two terminals from every midrange panel. Use a strip of

cellophane mending tape to fasten the loose wires to the center of each panel so the disconnected terminals don't touch anything but are close enough to their panel screws to reach them.

Now, plug in the screen's AC supply and turn on the main system (balance control at center) so the functioning screen is playing at very low volume. Then turn that screen off with the balance control. (Although the polarizing supply is safe to touch, high-level signals from the power amplifier can produce lethal voltages across the panels.)

To avoid a safe but unpleasant shock from the polarizing supply, stand on a rubber mat or wear dry sneakers and, with the signal still feeding the screen, use one hand (with the other in your pocket) to reconnect each panel in turn, starting its terminal nut with your fingers to hold the terminal on. You should start to hear midrange output from the first panel reconnected. If not, that is probably the defective one. If so, reconnection of another one will eventually cause a spark and loss of midrange level, and that will be the bad panel. If you still can't seem to locate it, don't try to trouble-shoot the system further than that. Call your dealer for assistance.

If you locate a bad panel, disconnect all three wires from it and use sticky-tape to fasten them to the rear of the panel where they can't touch any other metal parts, and order your replacement panel from your dealer. Replace any other disconnected wires and make the nuts as tight as you can get them from finger pressure alone. You can now continue to use the system until the replacement panel arrives—which may, if the experience of some previous Infinity customers was typical, be quite some time.

Operation with one module (or even two, for that matter) does no harm and has little effect on the sound. It does however have some sonic effect: it knocks down the low-end response of that screen, and will cause a slight dip in the system's mid-bass range. So do make the effort to replace a defective panel.

To replace a panel, remove the wooden strip at the outer edge of it and gently pry it out. Slip the replacement's inner edge (terminals at the bottom edge) under the center retaining strip and work it into place, then reinstall the wooden edge strip with its screws.—J. Gordon Holt

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Floor Loudspeaker Reviews

Infinity Servo-Statik 1 loudspeaker Specifications

Sidebar 2: Specifications

Description: Three-way stereo loudspeaker system consisting of two electrostatic screens and a single common-bass woofer "commode" (18" cone drive-unit), with a separate line-level crossover/100W amplifier (1968), a separate line-level crossover (1975). Crossover frequency: 100Hz (1968); 70Hz, 2kHz (1975). Nominal impedance: 16 ohms.

Dimensions: Screens, 36" H by 28" W by 7" D; woofer 24" H x 24" W x 24" D (1968); Screens 60" H by 22" W x 8" D; woofer 19" H x 22" W x 22" D (1975).

Price: \$2000, including crossover and bass amplifier (1968); \$4000, including electronic crossover (1975); no longer in production (1978 onward).

Manufacturer: Infinity Systems, Inc., Chatsworth, CA 91311 (1968); Infinity Systems, Inc., Canoga Park, CA 91304 (1975); Infinity Systems, Inc. (a division of Harman International), 250 Crossways Park Drive, Woodbury, NY 11797. Tel: (800) 553-3332. Fax: (516) 682-3524. Web: www.infinity.com (2003).

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