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**THE INNER EAR** REPORT

## ***"...ASTONISHING... IMPECCABLE PERFORMANCE..."***

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***"...a great sub...  
whether you use it  
in an audio system  
or in a home  
theatre system, its  
impeccable  
performance  
will provide  
considerable value,  
by improving the  
performance of  
your system"***

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**P**aradigm needs no introduction to the audio market place. The company has been around for many years selling products around the globe and we assume that most folks who have looked at audio gear in the past will know about this Canadian-based company.

The Servo-15 was introduced about six months ago. The objective was and is to complement Paradigm Reference speakers, or any other limited bass bookshelf-type designs and home theatre installations.

#### **APPEARANCE:**

Well, it's a subwoofer and its box-like construction looks the same as so many others. Our sample came in a black ash finish, but light cherry and "rosenut" veneer finishes are available (Paradigm's principles include saving

the rain forest and rosewood is rare and expensive). The enclosure measures 20 inches high, 18 inches wide and 21-1/2 inches deep. Our model had the amplifier mounted on the sub's rear panel and only the heat sinks are visible. There is an input and a gain adjustment as well as a three-position switch which allows users the choice of on/off or automatic. The auto function turns the woofer on when a signal is sensed and off after a few minutes when no signal is sensed. Solid rubber feet support the enclosure.

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#### **TECHNOLOGY:**

All components are manufactured by Paradigm. The 15-inch driver has a diecast aluminum basket/chassis which was chosen for the material's mechanical ability to control ringing and straining. A Kevlar-fibre reinforced composite cone was selected for its internal

damping properties and for its low-mass, strict control over unwanted resonances. The motor assembly features a 1.4 inch long, 2+2 layer voice coil with aluminum/nomex former topped by a rigid convex dome. The pole piece is computer-optimized and boasts a low-turbulence centre vent and aluminum heat dissipation rings to provide high power handling without audible distortions. A large magnet assemblage using magnetic field geometry for focused excursion is employed to warrant low distortion and optimum linearity. Additionally, Paradigm includes an instrument-grade accelerometer to monitor the output of the driver. This upscale (expensive) device is very rugged to resist the driver's rapid motion changes.

***“...even at high volume levels, there wasn't any distortion...the Servo-15 stood up to the punishment, handled it with ease and never overpowered the system.”***

All this technology is housed in a solid 97 litre (3.4/cu.ft) enclosure, trademarked as a Cascade Enclosure. MDF composite board is used throughout and the internal braces run the full perimeter arranged in a locking cascade with the cabinet to attune the design. The integration provides a meticulous enclosure with remarkable freedom from vibrations. Internal damping is achieved with ultra-fine high-loft polyfibre material to absorb rear and internal wave energy. The spec-sheet states that the sub works in the frequency range from 17Hz to 80Hz ( $\pm 2$ dB). The harmonic distortion is less than 0.3%.

Paradigm holds a patent for its amplifier which is rated at 400 watts. The amplifier/crossover is built into the cabinet.

#### **THE SOUND:**

While we couldn't confirm the low 17Hz, our home theatre system, as well as our audio-only system, resolved effortlessly down to around the 22Hz region – an astonishing task for any sub, at any price. In our home theatre setup, we used the Pioneer Elite processor/preamp connected to our satellites. In the audio-only system, we used the Paradigm Reference Studio/20 bookshelf-type speakers which rounded out the sound to complete all of the audible frequency range. The most astonishing thing for our listening panelists was the uncanny blend with the satellites and, aside from bass extension, the sub's resolution in the low frequency domain below 80Hz. In the home theatre setup, we managed to blend the Servo-15's energy with the home theatre system, resulting in seamless integration of film sound. Action movies, with a lot of slam on the soundtracks, sounded rather dynamic and even at high volume levels, there wasn't any distortion. In the audio setup, we

played back some organ music with low 24Hz pedal-notes; again the Servo-15 stood up to the punishment, handled it with ease and never overpowered the system. This, of course, took careful level adjustments, relatively easy to achieve with a little help from our panelists. All in all, we believe that this sub is an exciting new product from a company which has again introduced a quality product for a reasonable price.

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#### **SYNOPSIS & COMMENTARY:**

Subwoofers are used to augment bass response in a given system. In today's market subs are used more frequently in home theatre systems which have little regard for resolving low frequency information. A good sub, however, should be considered an important addition to optimize the sound of some types of satellite loudspeakers. To optimize means to augment or enhance, not to predominate the frequency uniformity or to disorder the tonal balance of a system. Our man in the movie sound business, David McCallum, has often aired his disappointment with home theatre setups which impart enough bass energy to upset delicate stomachs. We have found that in most system configurations the bass is either too much, too flabby or both. Carefully adjusted gain, crossover points and placement are of the utmost importance. Therefore, it is critical to place a subwoofer behind the main/satellite speakers for best system integration. A good starting point is about four feet behind the main speakers. With the help of a friend, the ultimate placement can be determined by moving the sub back or forward in increments of about three inches. Crossover adjustments should begin at about 80Hz while gain should be somewhere midway between maximum and minimum. Fine-tuning may take a while, but the payoff is proper integration of the system. A good sub should not be noticeable as a distinctly separate component; rather, it ought to function as an integral element for reproduction of music and cinema sound. Excuse the preaching but it is essential to understand what a good subwoofer can do for your system and for your enjoyment.

The Paradigm Servo-15 is not a good sub, it's a great sub and it warrants all the aforementioned babble so you, the potential consumer can realize its excellent sonic attributes. Whether you use it in an audio system or in a home theatre system, its impeccable performance will provide considerable value, by improving the performance of your system.