HIGH-DEFINITION SOUND™

Signature Servo Subwoofer

The sheer physical demand of reproducing deep bass notes while maintaining formidable output typically leads to a huge driver in a very large enclosure. Not very practical for today's living spaces! Signature Servo follows a different design path.

Our powerful high-excursion bass driver, with massive computer-optimized motor structure is paired with our patented Ultra-Class-D™ amplifier. The driver boasts an extremely rigid proprietary RCR™ cone—able to respond instantly to the leading edge of changing bass notes. The super-efficient amplifier supplies very high power output—1500-watts RMS, 4500 watts of peak power! Behind the scenes, controlling the driver's operation, is our patented state-of-the-art Closed Loop Servo system—precisely tracking the input signal to ensure incisively accurate bass, while reducing distortion to inaudible levels.

The Signature Servo is accurate to an astonishing 10 Hz! In a typical listening room it can reproduce a staggering 123 dB without audible distortion. It is truly an amazing engineering achievement! Bass performance is so clean, so true, so transparent that only the vivid realism of the deepest or most delicate bass note remains—the source of the bass, the Signature Servo, simply disappears.

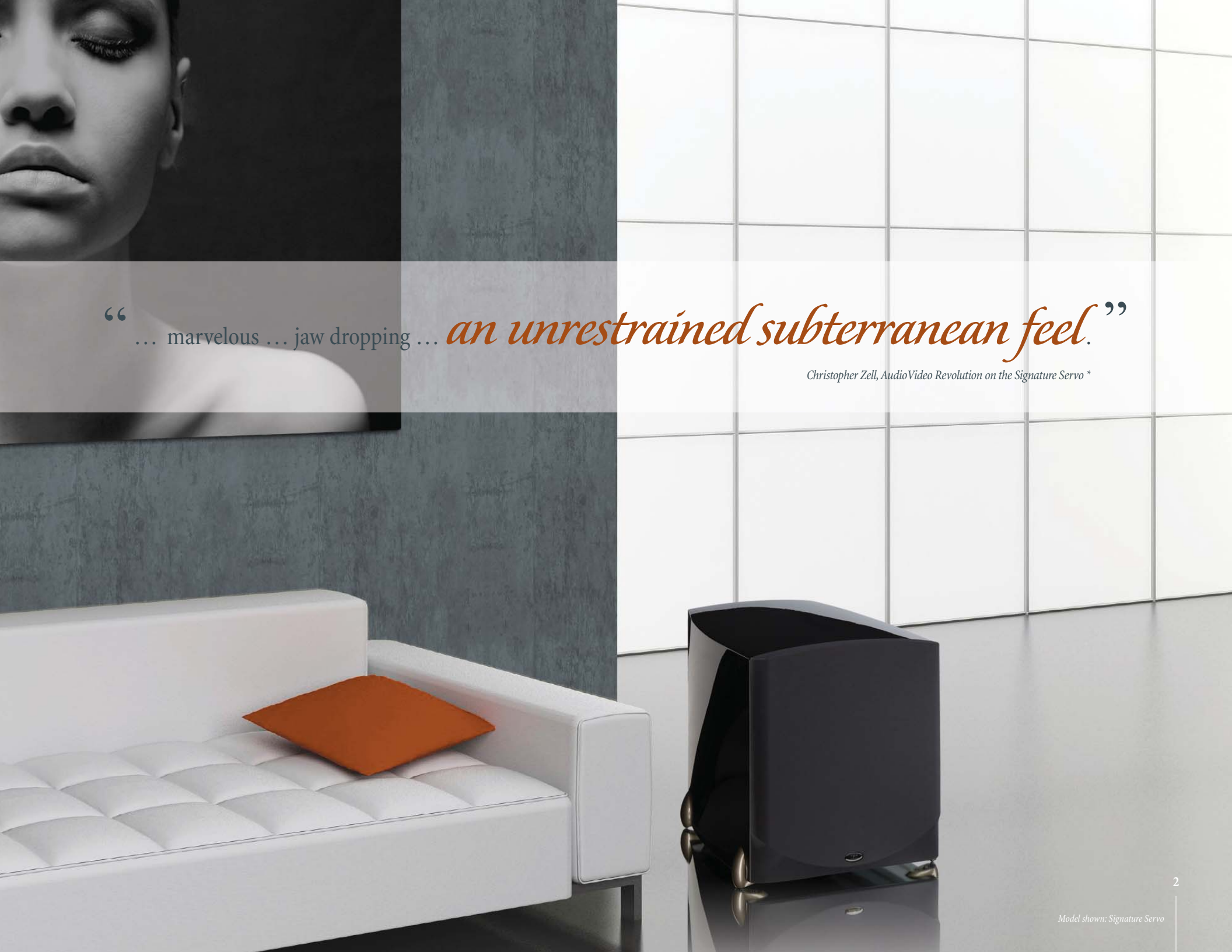
Paradigm® Reference Signature Servo Components

Bass Driver:
Precision-engineered for exceptional power handling with an advanced high-stiffness RCR™ cone.

Accelerometer:
Instrumentation-grade accelerometer continuously monitors the output of the bass driver.

Comparator:
Highly advanced electronic circuitry compares the bass driver's accelerometer output to the input signal and makes instantaneous amplifier corrections.

Amplifier:
Super-efficient Ultra-Class-D™ switching amplifier is optimized to completely control the operation of the bass driver.



“… marvelous … jaw dropping … *an unrestrained subterranean feel*.”

*Christopher Zell, AudioVideo Revolution on the Signature Servo **

Model shown: Signature Servo

HIGH-DEFINITION SOUND

Paradigm® Reference *Signature* Servo Bass Driver

Our proprietary leading-edge 15″ high-excursion bass driver has in excess of 51-mm (2 in) peak-to-peak cone travel. Free from unwanted resonances, standing waves and micro distortions, it delivers superior bass extension, unparalleled definition, awe-inspiring dynamics with incredible speed and visceral power.

Next-Generation Mineral-Filled Co-Polymer Polypropylene Cones with RCR™ Resonance Control Ribs:
High stiffness design is intrinsically low in distortion. Cone is able to respond instantly to the starts and stops of even the leading edge of bass notes.

76-mm (3 in) Bifilar 8-Layer High-Temperature Aluminum Voice Coils:
Wound on a high-temperature Apical™ former in an oversize 8-layer bifilar configuration. Provides greater stability and support during extended cone excursion.

High-Pressure Die-Cast Aluminum Chassis:
Controls flexing and ringing, and since aluminum is non-magnetic, eliminates stray magnetic losses.

Proprietary AVS™ Airflow Ventilation System Cooling:
Conducts heat away from the voice coil. Massive built-in "zig-zag" ribs increase heat dissipation surface by 40%, providing forced-air cooling during large musical transients and chassis convection cooling at all other times.

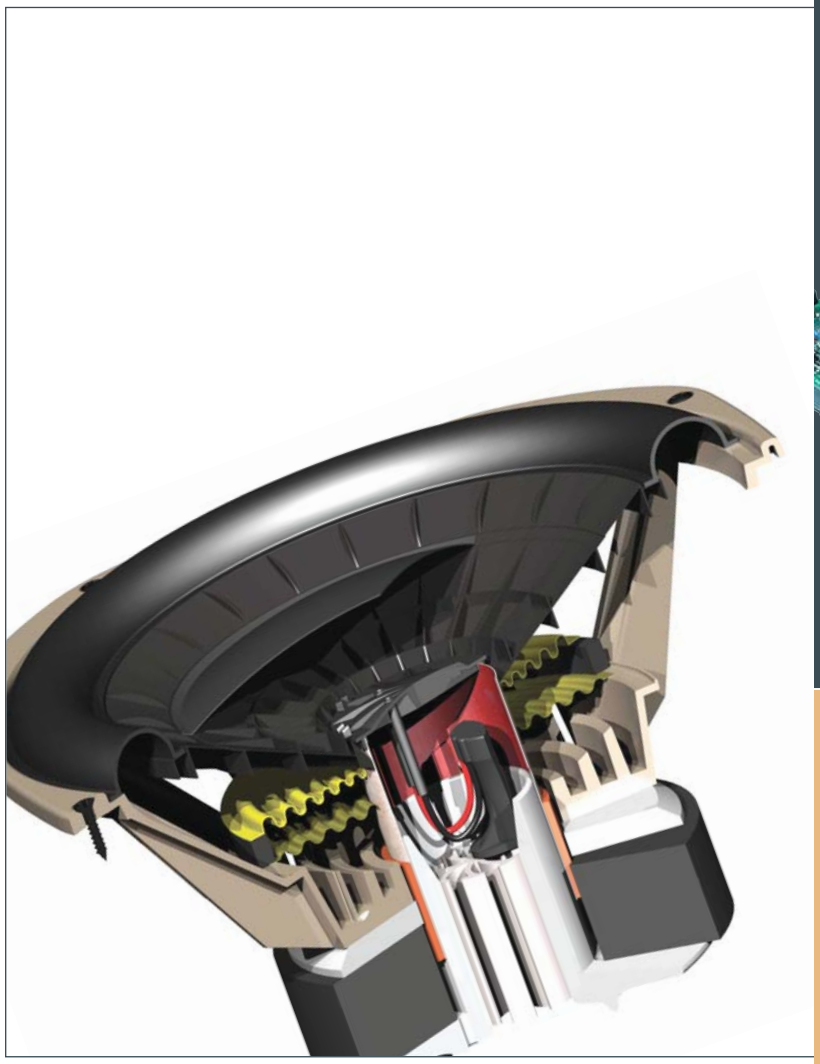
Massive Extruded-Aluminum Ventilated Center Heatsink:
Provides internal forced-air cooling to drive heat away from the high-velocity low-turbulence pole piece, thereby increasing power handling and reducing distortion.

Dual Spiders and Oversize Long-Travel Suspensions:
Allow for extreme cone excursion while maintaining exacting control over cone movement at all times.

Massive Computer-Optimized Magnet Structures with Balanced Field Geometry:
13-kg (29 lb) magnet structure generates an enormous magnetic forcefield while also minimizing inductive distortion.

Proprietary Voice Coil Wire Guide with UMD™ Ultra-Rigid Mounting Domes:
Provide precise and stable accelerometer mounting. Wire guide allows large-gauge wire connection to the voice coil with unrestricted cone movement. Rigid wire guide cap stiffens the cone/voice coil interface.

Superior Instrumentation-Grade Accelerometer:
High sensitivity and ultra-low noise (below -100 dB) designed to withstand the driver's extreme changes in motion—over 100 times the force of gravity. (Rated in excess of 150 g's.)



Paradigm® Reference *Signature* Servo Ultra-Class-D™ Amplifier

Designed and manufactured by Paradigm, the Signature Servo's patented controller/amplifier completes our state-of-the-art Closed Loop Servo system.

Leading-Edge Patented Amplifier/Controller:
Provides 1500 watts RMS, 4500 watts Peak high-current discrete output, with advanced patented servo controller—compares the output of the accelerometer to the input signal and makes instantaneous amplifier corrections. The amplifier's massive power output then controls the driver's cone motion to ensure precise signal tracking.

Novel Adaptive PWM Power Processor:
Minimizes distortion and optimizes efficiency. Unlike conventional Class-D designs our Ultra-Class-D™ inherently rejects power supply variations.

Massive Low-Noise High-Power Toroidal Isolation Transformer:
Oversize 6.4-kg (14 lb) advanced-generation transformer allows for an open-architecture Class-D system. Ensures prodigious output and ultra-quiet operation through what is virtually a complete reduction in stray magnetic fields.

Opto-Coupled Inputs:
Offer better isolation and lower noise.

Precision Components and Dual-Sided Military Spec (FR-4-rated) Glass/Epoxy Circuit Boards:
Ensure superior high-end performance and long-term reliability.

CNC / EDM-Machined Amplifier Panel:
Beautifully engraved, ultra-rigid aluminum panel also provides substantial heatsinking.

Advanced Output Stage:
Increases switching speed and efficiency. Unlike conventional Class-D designs which use the slow built-in diodes of the output MOSFETS, our Ultra-Class-D™ design steers circulating currents to ultra-fast diodes (ten times faster!).

Proprietary Voice Coil Temperature Sensor:
Should the voice coil overheat, the amplifier output is reduced until the voice coil cools down.

Amplifier Temperature Sensor:
Maintains the safe operating temperatures of the amplifier, even under extreme conditions.

Short-Circuit Protection:
Reacts within 10 µs.

Input and Control Facilities

Input Facilities

Low-Level Input – RCA:
Allows connection from the RCA (S/E) Sub/LFE-Output of your Preamplifier/Processor or other suitable low-level source.

Low-Level Input – Balanced XLR:
Allows connection from the balanced XLR Sub/LFE Output of your Preamplifier/Processor or other suitable low-level source. This input provides the lowest noise and distortion and is particularly important for long cable runs where noise and distortion could degrade performance.

Control Facilities

Auto On/Off:
Eliminates the need for a manually operated power switch. Turns the subwoofer on when there is an input signal. If no signal is present after a period of time, it turns off.

Trigger On/Off:
Allows the subwoofer's power on/off to be controlled by components that have a trigger output (preamp/processor, etc.).

Subwoofer Level Control:
Balances the subwoofer level with that of the other speakers in your system.

Subwoofer Cut-Off:
(Continuously variable 35 Hz – 150 Hz.) Controls the subwoofer's upper frequency cut-off. Can be set to match the low-frequency roll-off characteristics of your system's speakers.

Phase Alignment:
(Continuously variable 0º – 180º.) Accurately synchronizes your subwoofer and front speakers through their bass frequency overlap region.

Bass Contour:
Adjusts the contour of bass from flat (0.0 dB) the most accurate for music, or up to +6.0 dB at 60 Hz for more bass impact with movies, to suit your personal listening preferences.

HIGH-DEFINITION SOUND™

Design
Single high-excursion driver; Closed-Loop Servo system; sealed enclosure; built-in Ultra-Class-D™ amplifier

Signature Servo

Amplifier: High-Current, Discrete Output
4500 watts Dynamic Peak
1500 watts RMS Sustained

Amplifier Features
Auto-On / Off; Trigger-On / Off; soft clipping; thermal protection; electrical shorting protection

Bass Driver
380-mm (15 in) RCR™ mineral-filled co-polymer polypropylene cone; oversize surround; 76-mm (3 in) bifilar 8-layer voice coil; high-temperature Apical™ former; dual spiders; AVS™ die-cast heatsink chassis; 13-kg (28.6 lb) magnet structure

Low-Frequency Extension*
10 Hz (DIN)

Subwoofer Cut-Off Frequency
Variable 35 Hz – 150 Hz

Subwoofer Contour
Variable 0˚ to +6 dB at 60 Hz

Sub. / Sat. Phase Alignment
Variable 0˚ – 180˚

Line-Level Input
RCA (S/E) or Balanced-XLR. From Sub-Out / LFE-Out of preamp / processor or other line level source

Line-Level Input Sensitivity
100 mV mono

Line-Level Input Impedance
RCA: 25k ohms; XLR: 20k ohms

Internal Volume
83.5 L / 2.95 cu ft

Height, Width, Depth
51.0 cm x 46.0 cm x 55.0 cm
20-1/8 in x 18-1/8 in x 21-1/2 in

Weight
51.7 kg / 114 lb each

**DIN 45 500. Indicates -3 dB in a typical listening room. †With typical program source; provided the amplifier clips no more than 10% of the time. Listed height for Servo includes feet. Listed width does not include feet.*