

# Wilson Benesch Cardinal

## Wilson Benesch Introduces the New Flagship Loudspeaker, The Cardinal 27th September, 2012

Since its foundation in 1989, Wilson Benesch has consistently sought to push the boundaries of audio product design and manufacture. Notable examples include the world's first carbon composite curved loudspeaker cabinet (A.C.T. One – 1994) and the world's first hyperbolic carbon composite Tonearm (A.C.T. One Tonearm – 1991). Today, Wilson Benesch designs are based upon strong scientific foundations, driven by a passionate commitment to attaining a more natural sound reproduction, irrespective of accepted paradigms.

The company's manufacturing facility is founded upon consistent re-investment and highly collaborative research and development programs. It is upon this infrastructure that the most ambitious product to date, The Cardinal Loudspeaker was conceived, developed and manufactured, entirely by Wilson Benesch engineering and proven expertise.

### *Beautiful Geometric Form follows Function*

The Cardinal is the most advanced loudspeaker ever developed by Wilson Benesch. Carbon fibre based, advanced composite structures are combined to create a compact and elegant cabinet. Incredibly stiff materials and an optimized geometry afford the Cardinal a huge internal air volume, whilst giving the design a relatively low surface area. Control over these elements of loudspeaker cabinet architecture remains a strong philosophy for all Wilson Benesch designs.

Geometric forms inspired by those found in nature give the Cardinal phenomenal strength and beautiful form. Long flowing curves give way to monolithic sections of aluminum and taut sections of carbon fibre. These curved surfaces allow the Cardinal to sonically disappear: Stealth.

The form and geometry is instantly recognisable as a Wilson Benesch design incorporating accents that have evolved from many predecessors including the A.C.T. One, Bishop and Chimera loudspeakers.



But the Cardinal's footprint is more than twice that of the Chimera, and thanks to the high integrity shell structure the internal air volume is more than 65% larger than any of its predecessors. Standing 1-foot above the Chimera, the Cardinal reflects everything that a flagship product should. It is a testament to the unique and highly integrated design and manufacturing prowess of Wilson Benesch.



# Cardinal

## *Wilson Benesch Drive Unit Technologies*

Eighteen highly optimised Wilson Benesch drive units are deployed to achieve a new benchmark in dynamics and transient response, blended seamlessly to produce an exceptionally natural and highly transparent sound stage.

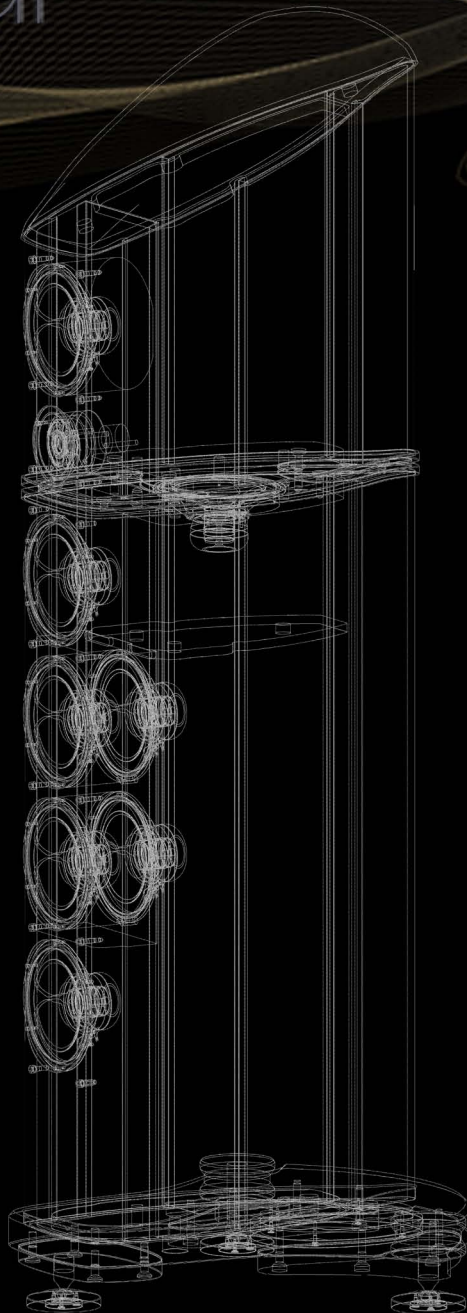
Like the rest of the Geometry Series, The Cardinal is fitted exclusively with proprietary drive unit technologies, designed, developed and built by Wilson Benesch.

## *Tactic-II Midrange & Isobaric-II Bass Enclosure*

A key design principle of The Cardinal has been to deliver extended low frequencies as well as an additional impact in the upper bass register. Notably these objectives have been realised without any compromise to the speed, agility and tonality achieved by the flagship designs that precede it.



Enter the Tactic-II Drive Unit: the latest iteration in the Tactic Drive Unit lineage. Through collaboration with the Sheffield Hallam University, industry leading flux analysis techniques have refined the Tactic-II motor, building upon the original unit that was the product of a £120,000 DTI funded Research and Development project as part of The Bishop loudspeaker development. The new Tactic-II motor has been refined to achieve a 3dB increase in output and significantly lower levels of internal air compression.



The Isobaric concept has been a central component in this pursuit of the ultimate low frequency performance. The smallest possible enclosure offers the lowest possible noise in conjunction with a controlled bass reproduction that is simply beyond the limitations of conventional, large diaphragm, slow woofer based designs.

The Cardinal's Isobaric Enclosure is 30% larger in volume than that of the midrange section and consists of four Isobaric Tactic-II bass units to achieve a class-leading transient response and dynamic control that is without equal.

A 35-kg sub-baffle, machined from a solid aluminum billet, houses the powerful Isobaric Tactic-II bass units, providing a solid platform from which the drivers can operate under control.

Carbon fibre alone is more than five times stronger than steel, yet half the mass of aluminum. As an advanced composite it is simply the ideal solution for energy control. Not only does the carbon fibre monocoque set the standard in terms of its stiffness to weight ratio, it is a complex damping system. The structure is formed within sophisticated Wilson Benesch tooling, from a sandwich of woven carbon fibre, glass fibre and an advanced engineering core, to deliver levels of damping that are several orders of magnitude superior to alternative materials commonly deployed in such structures.

It is possible to claim that without the above innovations in cabinet architecture and drive unit technology The Cardinal cabinet would need to be more than double its size in order to achieve the same level of performance. The resulting increase in cabinet noise would be a considerable compromise. The Cardinal can justifiably claim to exhibit the lowest signal to noise ratio of any loudspeaker cabinet available anywhere in the world today.

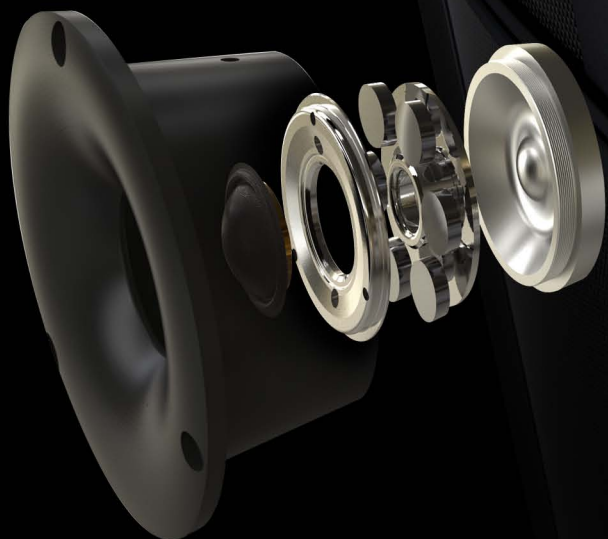
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## *Semisphere*

The Wilson Benesch Hemisphere Tweeter is the fruition of a 10-year development program that began with the original Tactic Drive Unit. It builds upon many of the finest tweeters available today, including the remarkable Murata piezo ultrasonic tweeter employed in The ACT C60 and The Trinity.

The design of the Hemisphere takes its starting point from soft dome technologies. The sound retains incredible linearity, dynamic contrast and resolution whilst remaining natural and unfatiguing.

The crowning achievement with the Hemisphere has been the motor. A ring of six of the most powerful rare earth magnets sit amongst a beautifully constructed motor. A precision machined front and rear plate completes the internal assembly, achieving maximal air venting at both sides of the coil. A cleverly designed superstructure, consisting of a bullet chamber at the rear to absorb energy and a perfectly convex front plate, creates the ideal launch surface for high-frequency sound.



## *TROIKA Concept*

The D'Appolito configuration is well documented, but the Troika concept builds on this configuration and through completely bespoke design, combines Wilson Benesch drive unit technologies and cabinet architecture to create an electro-mechanical filter.

The mid-range and tweeter enclosure houses a set of three drive units designed to work in complete harmony, free from complex crossovers which introduce electrical phase shifts ensuring that all three units are seamlessly integrated. The newly developed Hemisphere tweeter is filtered by a simple first order crossover and is located precisely between two vertically aligned Tactic-II mid drive units to create the perfect acoustic center. The Tactic-II mid drive units are mechanically filtered, no capacitors, no inductors just the cleanest possible signal path and connection to the amplifier.

## *Wilson Benesch Finishes*

Standard: Black Carbon, Silk Black  
Wood Satin: Natural Cherry, Maple, Oak  
Wood Gloss: White Gloss, Birds Eye Maple, Red Birds Eye, Burr Walnut, Ebonised Walnut, Walnut, Red Tulip, Zebrano

## *Availability*

First shipments for existing orders are scheduled for mid-November 2012. The orders will be filled and shipped on a first-come, first-served basis. Demo orders will take priority so all dealers and distribution can demonstrate the product globally.



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## Specifications

### Measurements

2.5-Way Floorstanding Loudspeaker

Nominal Impedance: 6 Ohms Nominal / 3 Ohms Minimal

Sensitivity: 90dB @ 1-Meter on axis, 2.83V Input

Frequency Response: 25Hz - 35KHz +/- 3dB

Minimum Amplification Power Recommended: 100 Watts/ channel

### Drivers:

1 x 25mm (1") Wilson Benesch Semisphere Tweeter

1 x 170mm (7") Wilson Benesch Upper Mid-Range Tactic II Drive Unit

1 x 170mm (7") Wilson Benesch Lower Mid-Range Tactic II Drive Unit

4 x 170mm (7") Wilson Benesch Isobaric Tactic II Drive Unit

2 x 170mm (7") Wilson Benesch Tactic Drive Unit (PASSIVE ABRs)

### Dimensions:

Height: 1735mm (68.3 inches)

Width: 620mm (24.4 inches)

Depth: 640mm (25.2 inches)

### Cabinet Construction:

Lower Midrange: High Performance Carbon Composite Monocoque (Infinite Baffle Sealed Enclosure)

Upper Midrange: High Performance Carbon Composite Monocoque (Tactic ABR Enclosure)

Isobaric Chamber: High Performance Carbon Composite Monocoque (Tactic ABR Enclosure)

35-kg Precision Machined Isobaric Sub-baffle

### Weight Per Channel:

120-kg (265 lbs)

