



ANALOGUE COLLECTION  
THE FUTURE IS CARBON



# circle 25

## REFERENCE TURNTABLE

Like any design, ultimate high performance can only be attained when all components have been optimised to work in harmony. Following this philosophy Wilson Benesch have taken all design and machining in house to create the Circle 25. Using State of the Art Dassault CAD/CAM Systems, Wilson Benesch precision machine each component in the Circle 25, within a tolerance of 0.01mm, creating a perfectly engineered masterpiece.

Forming the principle structural components of the Circle 25, the distinctive two-part Polyoxymethylene (POM) circular plinths replace the MDF plinths used in the original design. POM is a high-grade engineering homopolymer exhibiting superior stiffness and a superior damping coefficient.

The lower plinth houses the motor assembly, which is isolated from the upper plinth by three lossy polymer nodes. In turn, the upper plinth sees three alloy nodes meet with unidirectional carbon fibre cantilevers to create a unique sub-chassis suspension. The carbon fibre cantilevers are central to the success of the Circle 25 design. They exhibit exceptional stiffness and energy damping, providing a solid reference point for the platter and damping any structural borne resonance. This highly optimised design translates directly into the sonic presentation of the Circle 25, creating a wide-open soundstage, with the 'blackness' and solid quality to the analogue sound.

The final element is the bearing. The Circle 25 references the past to redefine the future. Taking elements of the original bearing design, the new bearing combines a hardened steel shaft and captive ball bearing, with a phosphor bronze bearing hub. With a highly polished surface finish, the bearing ensures the lowest possible level of friction and noise, whilst being phenomenally resistant to wear.

A turntable is purely a system of measurement, designed to allow a  $\sim 10\text{nm}$  ( $0.000001\text{mm}$ ) cantilever tip to trace a  $\sim 50\mu\text{m}$  ( $0.05\text{mm}$ ) groove in a piece of vinyl. By considering the microscopic level, it is then easy to appreciate the beauty of the Circle 25 design. What appears a simple design is in fact a complex and highly engineered analogue replay system.



BRITISH  MADE

# a.c.t. 25

## TONEARM

Torsionally 10x stiffer than Titanium, half the mass of aluminium, 5x the specific stiffness of steel, with a damping coefficient an order of magnitude greater than any conventional engineering material – Carbon fibre is truly one of the world's wonder materials.

At the inception of the original Wilson Benesch business plan, our strap line, "The Future is Carbon", recognised the potential for carbon fibre to change the way high performance systems would be manufactured and in doing so change the world as we know it. Today, more than 25 years on, examples of this change can be seen across the aerospace and automotive industry where ultimate performance is required.

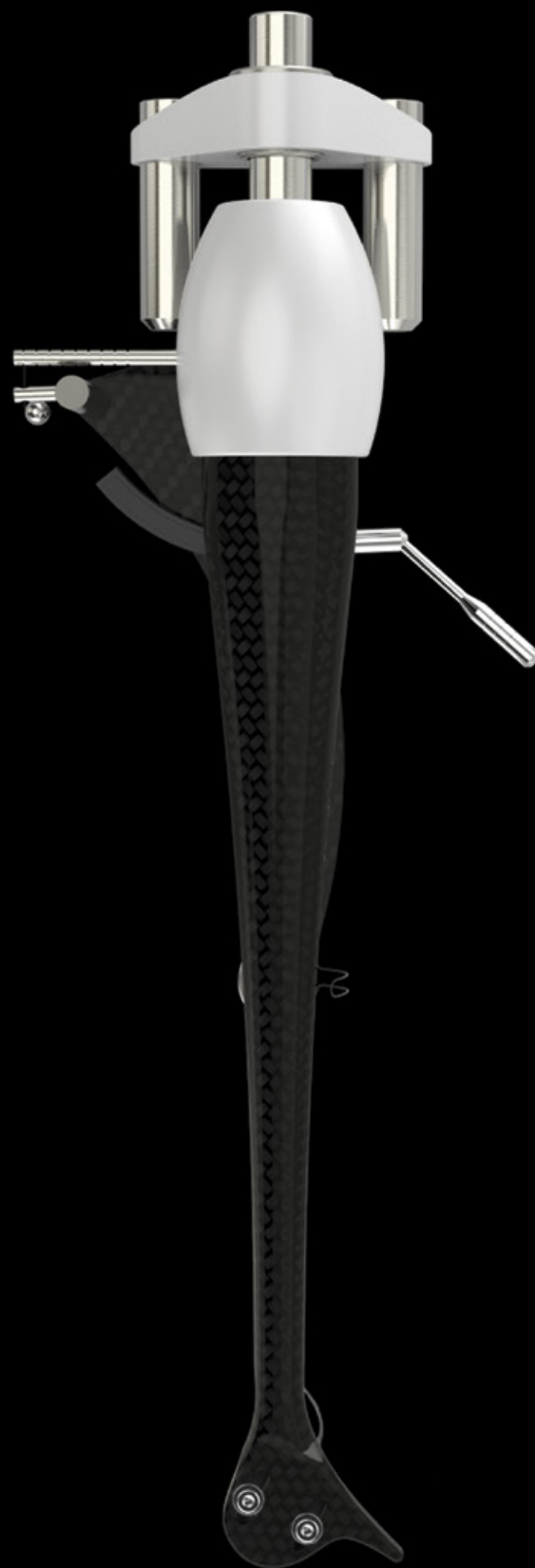
Whilst carbon composites have many properties that define it as a high performance material, it is the exceptional stiffness and damping properties of carbon composites that Wilson Benesch exploit.

The A.C.T. 25 Tonearm geometry has been highly optimised through finite element analysis (FEA) to extract maximum stiffness, maximum damping and minimum mass across the helical, tapered form of the tonearm.

The carbon fibre arm tube terminates into the aluminium eggshell. The geometry of this component has again been optimised to impart maximum stiffness : weight ratio. Residing beneath the egg is the kinematic bearing. Formed from a brass mount, which terminates with a brass ball cap holding captive, three x 1mm carbon-chrome ball bearings. This creates a high pressure, triangulated frame of reference ensuring that the centre point of the bearing can never change. It is a beautifully simple, yet stable and high precision design.

Wired internally with silk covered litz wire, terminated with gold plated RCA Phono plugs and featuring a solid carbon fibre arm board to 'park' the tonearm when not in use – the A.C.T. 25 Tonearm is a stunning tonearm.

  
Wilson benesch  
THE FUTURE IS CARBON



### SPECIFICATIONS

#### Material Composition

Helix of 0/90 woven carbon fibre moulded into headshell in one piece.

Aluminium and stainless steel counterweight

#### Bearing Design

Three-Point 'Kinematic Bearing' formed inside the aluminium eggshell. Consists of a brass mount, terminating with a brass ball cap holding captive, three x 1mm carbon-chrome ball bearings

#### Effective Mass

9g

#### Weight (exc. Counter-balance)

311g

#### Overhang

18mm

#### Effective Length

235mm

#### Mounting Distance

217mm (spindle to pillar)

#### Cartridge Range

Light Counterweight Option:

7.5g - 12.5g

(assuming max. tracking force of 2.4g and min. 1.3g)

Heavy Counterweight Option:

13.5g - 22g

(assuming max. tracking force of 2.4g and min. 1.3g)

#### Internal Wire

Silk Covered Litz Wire

#### External Wire

Silk Star Quad 4 \* 96 \* 0.05 Resseun Shield  
Core to Core 70pf // Resistance 0.108Ω  
Terminated with Gold plated RCA Phono Plugs

# circle 25

REFERENCE TURNTABLE

Launched to celebrate the company's 25th Silver Jubilee Anniversary, the Circle 25 is a highly engineered reference level turntable, replacing the original Circle Turntable.

Constructed from carbon fibre composite, multiple metals and polyoxymethylene, the Circle 25 fuses contemporary design with state-of-the-art materials technology, offering stunning resolution and detail in vinyl playback.

Machine finished, the Circle 25 is available either as a Black Edition or White Edition.



# nanotube one

REFERENCE TONEARM

Using identical geometry to the A.C.T. 25 Tonearm, superficially the Nanotube One appears almost indistinguishable. However, the Nanotube One derives its name from carbon nanotubes, which are infused with the carbon fibre during the manufacturing process at Wilson Benesch. As a result the Nanotube One is a staggering 30% stiffer than the A.C.T. 25, with enhanced damping performance.

By studying the Nanotube One tonearm at a microscopic level it is then possible to appreciate how evolved this tonearm design really is.

Each carbon filament, approximately 1/25th the diameter of a human hair, is barely visible to the human eye. The filament imparts maximum stiffness along its length. For this reason, the carbon fibres in the Nanotube One are arranged in a regular fashion, lengthways, around a helix, imparting maximum torsional stiffness and enhancing damping performance across the millions of carbon fibre filaments.

However, the real artistry of the Nanotube One takes place at a microscopic level, well beyond the resolution of the human eye. Structurally, carbon nanotubes are tubular cylinders of carbon atoms, with a diameter 1/10,000th of a human hair. Yet, at an individual tube level, these structures exhibit: 200x the strength and 5x the elasticity of steel – making them amongst the strongest and most highly damped structures yet discovered. Wilson Benesch infuse a carbon nanotube rich epoxy resin with carbon fibre, cross-linking at a molecular level takes place and forms a carbon fibre – nanotube composite structure.

Additional refinements have been made in the Nanotube One counter balance design. Wilson Benesch again looked to materials science to gain a performance advantage, deploying tungsten carbide counter weights behind the kinematic bearing. With a density comparable to other rare earth metals such as gold and platinum, and twice that of stainless steel, tungsten carbide allows the length of the counterbalance poles to be reduced. This retains the mass of the structure around the central axis of the bearing, increasing the stability of the whole tonearm structure.

The Nanotube One is a highly evolved design, developed over decades of iterative design improvements. Using the latest materials science and advanced manufacturing technologies, Wilson Benesch have created what is unquestionably the stiffest, most highly damped tonearm currently available today. A marvel of engineering.



## SPECIFICATIONS

### Material Composition

Helix of 0/90 woven carbon fibre moulded into headshell in one piece.  
Enhanced by uni-directional carbon fibre and nano technology internal high compression foam bulkheads

Aluminium and tungsten carbide counterweight

### Bearing Design

Three-Point 'Kinematic Bearing' formed inside the aluminium eggshell.  
Consists of a brass mount, terminating with a brass ball cap holding captive, three x 1mm carbon-chrome ball bearings

Effective Mass  
8g

Weight (exc. Counter-balance)  
265g

Overhang  
18mm

Effective Length  
235mm

Mounting Distance  
217mm (spindle to pillar)

Cartridge Balance Range  
9g - 13.5g

(assuming max. tracking force of 2.4g and min. 1.3g)

Internal Wire  
Silk Covered Litz Wire

External Wire  
Silk Star Quad 4 \* 96 \* 0.05 Resseun Shield  
Core to Core 70pf // Resistance 0.108Ω  
Terminated with Gold plated RCA Phono Plugs

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REFERENCE TURNTABLE

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## SPECIFICATIONS

### Material Composition

Polyoxymethylene (POM) Homopolymer Platter

Uni-directional carbon fibre suspension system

### Bearing Design

Honed phosphor bronze shell is mated to a highly polished high precision tool steel shaft

The design based upon precision matched components taken directly from the tried and proven design of the original Wilson Benesch turntable.

### Motor Design

Belt driven system using low noise, low ripple synchronous motor

### Weight (excluding tonearm)

10kg

### Dimensions

305mm (Plinth  $\varnothing$ ) // 139mm (H) x 397mm (front-to-back, inc. arm hub)

