

ortofon

*PW<sub>Ti</sub>*



# Ortofon MC Windfeld Ti

## World leader in the cartridge industry

Ortofon has always been a leading company in the field of sound reproduction. Founded in Copenhagen in 1918, Ortofon started by creating technology which served as the basis for adding a soundtrack to the silent movies of the early 1920s. In 1948, the company developed the first moving coil cartridge, and since then Ortofon has developed and manufactured more than 300 different cartridges, with our latest being the MC Windfeld Ti.

Today Ortofon is the world leader in phono cartridges. This is the result of combining design with technology and the highest level of engineering in the audio industry. Acoustics, materials technology and micro mechanics are key competences in Ortofon's technological prowess. Ortofon has its research and manufacturing facilities in Denmark; the production of cartridges and components is carried out at the company's factory in Nakskov, Denmark.

Production is based on experienced workers with a high level of craftsmanship. This assures the high uniform quality of Ortofon products. The phono cartridges are sold worldwide through a network of more than 60 importers and sales subsidiaries in the USA and Japan. Ortofon is today recognized among consumers and industry professionals as a quality brand.

## Per Windfeld

Ortofon's former chief engineer Per Windfeld falls into the category of true hi-fi visionaries. His massive contribution has been a feature of the development of cartridges all over the world ever since he emerged in the mid-1970s as head of development for the famous MC 20 cartridge.

In continuation of the Ortofon design tradition and the new paradigm in engineering and manufacturing, we are proud to introduce the MC Windfeld Ti, a new moving coil phono cartridge in the absolute high-end class. At the heart of the MC Windfeld Ti lies a revolutionary customized Selective Laser Melting (SLM) manufacturing technology pioneered by Ortofon for manufacturing of the legendary MC A90 in 2007.

## MC Windfeld Ti

Ortofon's new MC Windfeld Ti has gone to the next level by reducing unwanted vibrations and increasing the dynamic capability of the cartridge. Our extensive knowledge of vibration properties, characteristics in different shapes and materials, competences in magnetism, mechanical design and new technologies have been applied for optimization of the MC Windfeld Ti model.

Those who choose to adopt the MC Windfeld Ti will experience the lifelike, dynamic and open sound, with exceedingly clear midrange. The MC Windfeld Ti remains extremely musical while paying close attention to micro dynamic details, with its delicate, but also analytical nature.



## Advancements in technology

The SLM technology and high precision process eschews traditional techniques: considered an engineering breakthrough, the SLM process welds fine particles of Titanium together, layer-by layer, to construct a single piece body devoid of extraneous material. This technique allows for precise control of the density of the body material, allowing for extremely high internal damping. The final result provides freedom over vibrations within the cartridge body material.

The use of Titanium in the MC Windfeld Ti has provided a further improvement to the overall rigidity of the structure, the cartridge weight and its dynamic capability.

# Magnet

## Neodymium magnet with armature and FSE

The magnet system is based on an extremely strong, compact neodymium magnet, which makes the generator system both compact and lighter through its minimal dimensions.

Inspired by the elements of MC A95 design, the MC Windfeld Ti makes use of a specially designed armature comprised of a metal alloy which is less magnetic than normal iron. This provides noteworthy benefit to the dynamic capabilities of the cartridge. The reason for this is that our high-tech armature has almost no influence on the magnetic field during movement. Hence when combined with the Aucurum coils of gold-plated 6NX oxygen free copper, it delivers perfect reproduction of the cantilever movements without compromise. Any trace of remaining magnetic influences that would create distortion is prevented by the use of a Field Stabilizing Element (FSE).

FSE, a small cylinder of conductive material strategically placed inside the magnet system, guarantees that the force field remains stable regardless of the movement of the armature. FSE improves the channel separation, while at the same time minimizing dynamic distortion and intermodulation. The result: fantastic dynamics and even more elbow room between the musicians. You simply experience more drama and greater breadth, height and depth in the sound scenario between the high-end system's loudspeakers!

# Damping

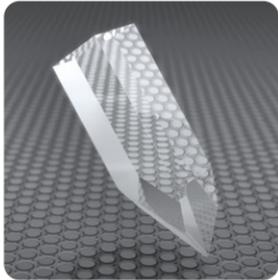


## WRD system

One of the important components is Ortofon's patented Wide Range Damping system (WRD), in which a small, heavy platinum disc is sandwiched between two rubber absorbers, both with different properties. This ensures not only an exceptional tracking performance, but also creates a perfect damping through the entire frequency range. Because of this, distortion and resonance are virtually eliminated.

The WRD system, which was originally introduced in the MC 20 Mk II in 1979 and was also used in the Exclusive Series cartridges, is one significant reason why the MC Windfeld Ti, while achieving the most linear frequency response and the highest upper frequency limit ever, at the same time tracks a fantastic 90  $\mu\text{m}$  at a vertical tracking force of 2.3 grams.

# Diamond



Replicant 100  
- the finest diamond in the world

Another precondition for linear reproduction with a wide frequency range and optimal tracking performance is a diamond - the shape of which is as close as possible to the original cutting stylus.

As featured in the entire Exclusive Series, the MC Windfeld Ti makes use of Ortofon's Replicant 100 diamond, known for its thin and light profile and extraordinarily large vertical contact surface. Since the Replicant 100 is closest to the shape of the cutting stylus, it can trace with accuracy unparalleled by any other stylus in existence. Special polishing of the diamond along with the use of a Boron cantilever offer remarkable transparency, speed, and responsiveness beyond that of any other combination.

# Materials and design

Extremely high end materials benefit new coil technology

Using Ortofon's Aucurum coils of gold-plated, 6NX oxygen free copper allows for zero-loss transmission of the diamond's movements via its Boron cantilever. This combination, which has also been employed for use in the MC Windfeld, MC A90 and MC A95 cartridges, combines low moving mass with an extremely high degree of rigidity.

A specially designed armature is used to achieve extreme precision in each coil turn in all layers. This enables the MC Windfeld Ti to achieve a higher degree of channel separation, while simultaneously offering lower distortion and better channel balance. A low output impedance of 7 ohm and a low output voltage of 0.2 mV makes the Ortofon MC Windfeld Ti a perfect partner for most step-up transformers as well as active MC pre-amps.

## Zero resonance cartridge

Historically, Ortofon has always followed its own path with regard to the mechanical design of the cartridge housing, because mechanical rigidity and total freedom from resonance in the audible range are a precondition for optimal sound quality. In the MC Windfeld Ti the cartridge's contact with the tonerarm takes place through three hard, well-defined contact points placed on the fastening section of the cartridge. This means that the mechanical integration of the cartridge and the tonearm arm is always absolutely perfect.

The MC Windfeld Ti is also unique in cosmetic terms: the parts of the cartridge housing are produced with matte black surfaces. The fastening section made in raw Titanium is distinct in silver color. The underside facing the record is covered by a new shield, which reinforces the mechanical structure. Per Windfeld's characteristic initials in silver accompanied by the letters "Ti" (Titanium) adorn the sides of the cartridge housing, paying tribute to Windfeld's legacy while at the same time signifying the technological advancements which create a new standard of analog performance.

## Set-up

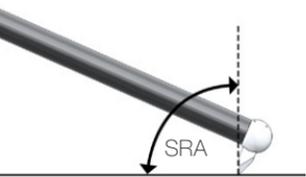
As with any cartridge, setup is absolutely crucial in order to ensure the best sound reproduction capabilities. Although there are many valid paradigms that exist with regard to cartridge setup, Ortofon does not endorse a specific methodology and encourages users to explore the options as suggested by their high end audio dealer, including professional setup.

In addition to alignment, consideration must be made to adjust azimuth, anti-skating and VTA in order to maximize the potential performance of any high end cartridge.



## Stylus Rake Angle (SRA)

With a complex stylus shape like the Replicant 100, there must be special attention paid to positioning the diamond in the groove.



The Stylus Rake Angle (SRA - see figure) is very important to the performance of the Replicant 100 stylus, and the long contact surface (the sharp edge) of the diamond should be almost perpendicular to the record surface when viewed from the side. The angle between the record surface and the cantilever is close to 23 degrees when SRA is 90 degrees.

A perfect starting point is to set the tonearm parallel to the record surface and to use the recommended tracking force. The contact surface will be close to perpendicular to the record surface with this setting. The SRA can now gradually and carefully be changed by adjusting VTF and, if necessary, the tonearm height. The target should be an SRA around 92 degrees, determined by the listening experience. In other words, the point of the stylus should point slightly towards the tonearm base.

## Azimuth adjustment

In order to attain maximum channel separation, it may be possible to adjust the azimuth. Should the cartridge not be perfectly perpendicular to the record's surface, the tonearm or headshell may require to be tilted a few degrees.

Correct azimuth is established by observing the reflected image of the 2 parallel cartridge front lines. The cartridge's front lines must form a straight line with the reflected lines. A flat mirror may also be used to facilitate this process.



## Mounting

For mounting the cartridge to the headshell you have 3 pairs of screws at your disposal. It is of great importance to use the right length of screws when mounting the cartridge. Using too long screws may stop the screws inside the cartridge resulting in insufficient mounting in the headshell. The choice of screw length is depending on the thickness of the headshell, and a maximum of 3 mm free screw length under the headshell: For headshells up to 2 mm use 3 mm screws. For headshells between 2 mm and 3.5 mm use the 5 mm screws from the packing. For headshells between 3.5 mm and 5mm use the 6 mm screws. Mount the cartridge loosely to the headshell at this moment.

## Antiskating

For the MC Windfeld stylus types just set normal antiskating, according to recommended tracking force.

## Connecting

Please correlate the colour code for the terminals on the drawing with the colour coding on the cartridge.

The terminals for right and left channel have the same position as normal for Ortofon cartridges. We recommend the enclosed leadwires to be mounted on cartridge and tonearm before aligning and calibrating the cartridge. The length of the enclosed lead wires will fit a distance between cartridge and tonearm terminals of 35 mm, which will work with most headshells.



## Protection

### Stylus Guard

The stylus guard provided for the MC Windfeld Ti is designed to be easily replaced and removed without risking contact to the fragile stylus assembly. To avoid accidental damage to the stylus or cantilever please mount the enclosed stylus guard onto the cartridge whenever the cartridge is not in use. The stylus guard should also be attached during mounting or removal of the cartridge.

A new stylus protection guard is available through Ortofon webshop:  
[www.ortofon.com/hifi/products/styli-guards](http://www.ortofon.com/hifi/products/styli-guards)



## Maintenance

### Ortofon Repair service

Ortofon MC Windfeld Ti is an exclusive cartridge of very high quality. To support our customers who have accidentally damaged their cartridges, Ortofon provides a special Repair service and Exchange service. Should you have a need for these services, please contact your local Ortofon Authorized Partner for more details.

Special Repair service is also available through the Ortofon webshop:  
[www.ortofon.com](http://www.ortofon.com).

## Stylus care

We do not recommend the use of solvents of any kind for cleaning of either the record surface or stylus. If necessary, records may be washed in lukewarm demineralized water with a dash of sulfonic soap. Remove dust carefully from record surfaces by using a fine antistatic brush or cloth before every use. The use of solvents on the stylus and cantilever may damage stylus cement; interior parts of the cartridge can be affected seriously by the intrusion of solvents.

The Ortofon warranty will not be valid in cases where such treatment has caused malfunction. For cleaning the stylus, use the enclosed fiber brush a few times along the cantilever in the direction of the stylus, whenever you play a new record or change sides. Record care should also be performed regularly and is of paramount importance to prolong the life and condition of the stylus. Because of this, a record cleaning machine may be considered for ease and quality of record cleaning.

## Cartridge break-in

Although the MC Windfeld Ti will provide top reproduction right out of the box, the cartridge may slightly change character during the first tens of hours of use. This is completely normal and you may, in fact, find that this adds further refinement to your listening experience.

## Warning

This phono cartridge is only for mounting on tonearms and must not be used for other purposes.



# MC Windfeld Technical Data

TECHNICAL DATA	MC Windfeld Ti
Output voltage at 1,000 Hz, 5 cm/sec.	0.2 mV
Channel balance at 1 kHz	0.5 dB
Channel separation at 1 kHz	25 dB
Channel separation at 15 kHz	20 dB
Frequency response	20 Hz – 20 kHz +2 dB / -1 dB
Tracking ability at 315 Hz at recommended tracking force	90 µm
Compliance, dynamic, lateral	13 µm/mN
Stylus type	Nude Ortofon Replicant 100, special polished on Boron cantilever
Stylus tip radius	r/R 5/100 µm
Tracking force range	2.0 – 2.5 g (20 – 25 mN)
Tracking force, recommended	2.3 g (23 mN)
Tracking angle	23°
Internal impedance, DC resistance	7 Ohm
Recommended load impedance	> 10 Ohm
Coil wire material	Aucurum
Cartridge body material	SLM Titanium, Stainless steel
Cartridge colour	Titanium/Black
Cartridge weight	11 g



Get more information about  
the MC Windfeld Ti cartridge

Ortofon MC Windfeld Ti Userguide 21/04-5-800151-12

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Date:

Approved by:

Ortofon A/S | Stavangervej 9 | DK-4900 Nakskov | Denmark | [www.ortofon.com](http://www.ortofon.com)