A new moving coil quartet from Ortofon.

More innovations in sound reproduction.

From the infancy of the audio industry, Ortofon has been the leading designer and manufacturer in the cartridge field. For over 35 years, music lovers and hi-fi experts alike have acknowledged Ortofon moving coil cartridges as the most accurate reproducers of recorded sound available.

Because, throughout those years, Ortofon have continually developed newer, more advanced moving coil cartridges. Constantly extending the variety and performance of our range, and staying ahead of our rivals.

This brochure features the four latest results of this development programme. The MC 200, an integrated design that has already won the approval of the world's audio critics. The MC 100 Integrated, a "junior" version of the MC 200. And "Universal" versions of these two cartridges, with standard mounting brackets to fit all conventional headshells and cartridge mountings.

We believe this new series are more than worthy successors to the long line of models that have made Ortofon the leading name in moving coil cartridges. And we're sure that when you hear them at work, you'll think so too.

The Precise Complement.

Ortofon started in business as manufacturers of the cutterheads which actually cut records. Today our cutterheads and amplifiers are used in this process by many major studios, and we are still the only company in the world making both cutterheads and playback cartridges. It is a position which has given us unique experience and a decided advantage over the competition.

Since those cutterheads operate on the moving coil principle, it seemed only natural to use that same system when we began making cartridges as well.

In cutting records, the sound signals are fed to the coils which move in a magnetic field. They then drive the cutting stylus, which presses the signals into the record's grooves.

When playing the record, these signals move the stylus at one end of a cantilever. At the other end of this cantilever is a pair of coils, one for each stereo channel, which also move in a magnetic field.

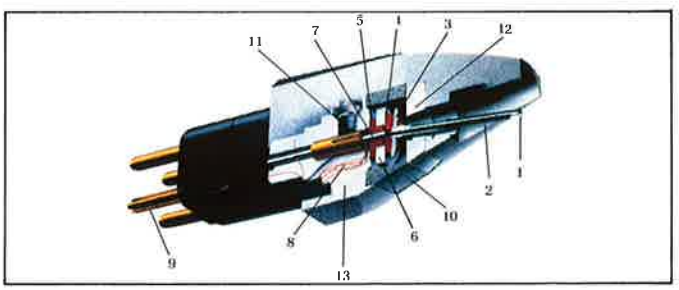
Because the motion of these coils can produce true replicas of the signals which originally drove the cutterhead, moving coil cartridges are the precise complement to the moving coil cutterheads. No other type of cartridge can reproduce the sound with such accuracy.

How the Moving Coil Works.

A moving coil cartridge is really a miniaturised power generator. Electrical current is generated in the coil, when it moves in a magnetic field. Our illustration shows the patented construction principle used in Ortofon moving coil cartridges.

The coil winding has two different positions. In the neutral position, the magnetic field will by-pass the coil and no signal is generated. But when a movement of the stylus and cantilever shifts it to the second position, the magnetic field passes through the coil and induces an electrical signal. The two stereo channels have separate coils, located so that each produces independent signals.

The coils used in these Ortofon moving coil cartridges are so minute, they have to be wound under a microscope. Each one contains a few turns of a copper wire, so fine that just one kilo (2.2 lbs) is sufficient to make almost a million cartridges.



The basic unit consists of the following components:
1. *Nude, Fine Line diamond stylus.* **2.** *Pure boron cantilever.* **3.** *Armature wound with signal generating moving coils.* **4.** *Front rubber bearing* **5.** *Rear rubber bearing.* **6.** *Metal disc separating the two rubber bearings* **7.** *Tension wire.* **8.** *Signal leads from the moving coils.* **9.** *Gold-plated connecting pins.* **10.** *Ring Magnet.* **11.** *Fastening screw.* **12.** *Front pole piece.* **13.** *Rear pole piece.*

You Can Hear The Difference.

Most stereo cartridges on normal record decks are of the magnetic type. These provide a high standard of sound quality, with adequate output for most amplifiers, and have the added advantage of being constructed with easily replaceable styli.

Moving coil cartridges, on the other hand, are more expensive, since much of the construction and assembly has to be done by hand. And their output voltages are generally not high enough to feed the amplifier's phono inputs without the addition of a special booster device.

However, the moving coil's superior linearity and accuracy means it will give sound reproduction of a much higher quality. So this type of cartridge has always been preferred by professionals and serious music enthusiasts.

Linear Phase Technology.

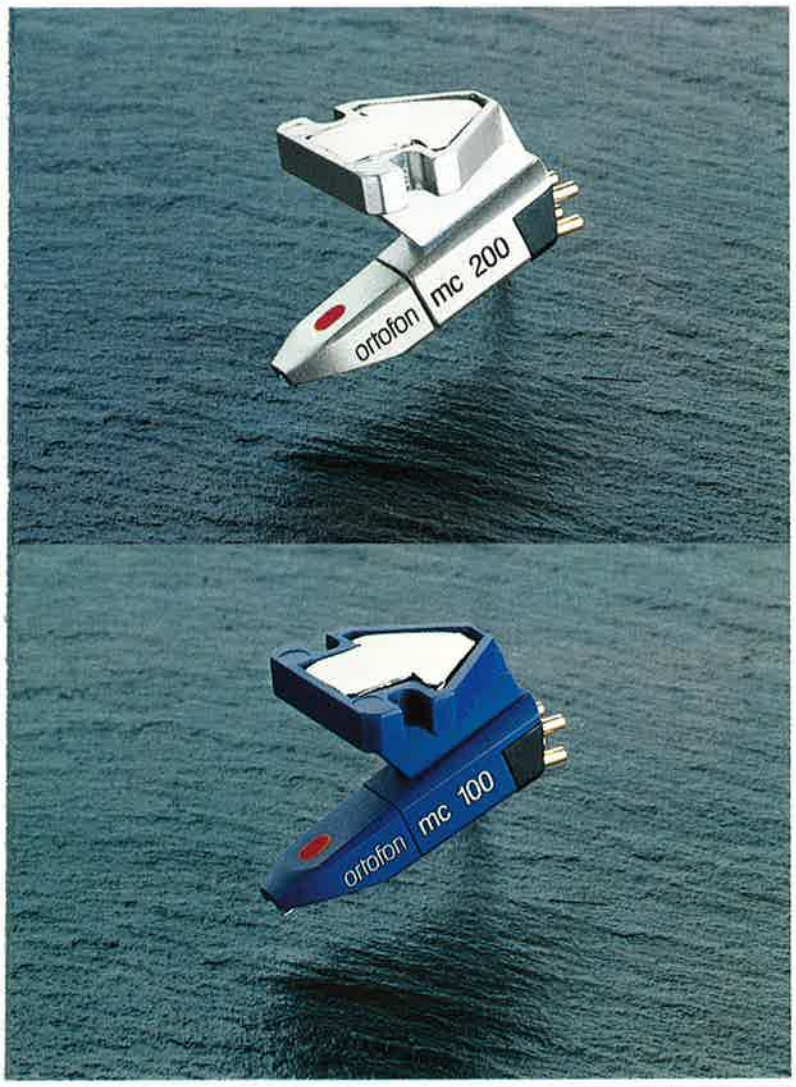
Ortofon's linear phase technology the Ortophase® Concept - has been applied to this new moving coil cartridge series. We now know that by allowing a slightly rising characteristic in the high frequency amplitude response of the cartridges we

MC 200.

Since its introduction the MC 200 has been winning praise and prizes from audio experts everywhere. Including the Japanese Stereo Components Grand Prix, the hi-fi industry's most coveted award. Because, quite simply, the new developments and selected materials contained in the MC 200 have resulted in sound reproduction quality that is in a class of its own.

The MC 200 uses a tiny, highly polished, asymmetrical Fine Line stylus; a rigid, super-light boron cantilever; and an improved version of Ortofon's patented Wide Range Damping (WRD) system. It also features a miniature, but powerful samarium cobalt ring magnet, which surrounds the moving coils and creates a perfectly symmetrical and homogeneous magnetic field.

The compact design of this magnet has allowed us to construct a miniaturised cartridge unit and an elegant, slimline housing. This will plug directly into any tonearm with a standard socket, and incorporates overhang and vertical adjustment facilities.



are able to improve their phase response characteristics. Consequently, these new cartridges have been engineered to give a rise in amplitude response starting at around 15 kHz and peaking at approximately 30 kHz. And the resulting optimal balance between amplitude and phase response characteristics has led to more accurate and sonically superior cartridges.

MC 100.

With the experience gained in developing the MC 200, plus a careful choice of component materials, we were then able to design a "junior" version of this top-quality cartridge. The new MC 100 integrated moving coil cartridge provides what is still a very high standard of performance, but at rather less expense.

So the special qualities of a moving coil cartridge, once within the reach only of wealthy or very dedicated music lovers, are now available to a wider range of listeners.

The MC 100's distinguished blue headshell contains the same moving coil and Wide Range Damping systems and ring magnet used in the MC 200. It also incorporates an aluminium cantilever with a nude, Elliptical diamond stylus.

MC 200 and MC 100 Universals.

This unique moving coil series is completed by the Universal or "U" versions of these two integrated moving coil cartridges. Their standard mounting brackets mean they can be fitted to almost any tonearm on today's market.

The performance of these Universal models is identical to that of their integrated counterparts. So the choice is really one of headshell/tonearm construction, and personal preference.

The Wide Range Damping (WRD) System.

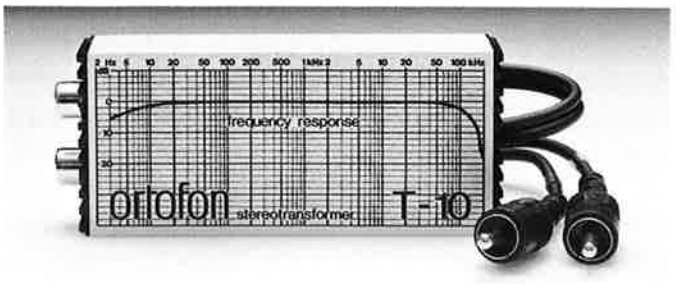
This patented system is one of the major reasons for the success of Ortofon's moving coil cartridges.

A cantilever system must have minimum effective mass at high frequencies and maximum compliance at low frequencies to give optimum tracking ability across the entire frequency range. By acting differently at high and low frequencies, our WRD system is able to provide damping which meets both these requirements.

In the new moving coil series, this damping system (and therefore the tracking ability) has been improved. Its twin layers of special rubber compound, which sandwich a metal disc, have been given a new shape which allows the cantilever a better operating position. At low frequencies, the rubber bearings let the cantilever make large excursions, tracking the high groove amplitudes which are found in this frequency range. While at high frequencies, the metal disc acts as a brake, uncoupling the two rubber sections so that only the front rubber bearing is operational. This reduces the moving mass at high frequencies, while the front rubber bearing continues to provide adequate damping for the frequency range.

In this way, the Ortofon WRD system ensures the best possible damping and tracking performance across the entire frequency range.

T 20 and T 10 - Transformers that match the quality of the cartridges.



Because of the miniaturisation of their moving coils, all Ortofon moving coil cartridges need extra amplification to boost their output voltages to a level that will drive amplifiers with conventional, moving magnet inputs. For this new moving coil series, we recommend either the T 20 or the T 10 as transformers whose quality matches that of the cartridges.

The T 20 is a step-up transformer of the highest quality, ideal for use with the MC 200 I or MC 200 U models. It employs two toroidal cores, and extensive shielding to eliminate any hum pick-up. It has a wide, flat frequency response; very low phase shift; essentially no distortion in the audible range, and its wide band characteristics permit outstanding transient performance. It also features a by-pass position, for switching between moving coil and magnetic cartridges.

The T 10 is a lower cost alternative to the T 20. Nevertheless, its design and construction produce a high level of performance, and it is particularly suitable for use with the MC 100 I or MC 100 U models.

Technical data:

	MC 200 I	MC 100 I	MC 200 U	MC 100 U
Output voltage at 1000 Hz, 5 cm/sec Channel balance at 1000 Hz Channel separation at 1000 Hz Channel separation at 15,000 Hz	0.09 mV <1.5 dB >25 dB 18 dB	0.09 mV 1.5 dB 25 dB 15 dB	0.09 mV <1.5 dB >25 dB 18 dB	0.09 mV 1.5 dB 25 dB 15 dB
Frequency range Frequency response FIM distortion at recommended tracking force, DIN 45.542 Tracking ability at 315 Hz at recommended tracking force	5-60,000 Hz 20-25,000 Hz +3/−1 dB <1% 80 µm	5-50,000 Hz 20-20,000 Hz +3/−1 dB <1% 70 µm	5-60,000 Hz 20-25,000 Hz +3/−1 dB <1% 80 µm	5-50,000 Hz 20-20,000 Hz +3/−1 dB <1% 70 µm
Dynamic compliance at 10 Hz Horizontal/Vertical Vertical tracking angle Type of stylus Equivalent stylus tip mass Recommended tracking force	13/13 µm 20° Fine Line, nude 0.5 mg 15 mN (1.5 g)	11/11 µm 20° Elliptical, nude 0.5 mg 15 mN (1.5 g)	13/13 µm 20° Fine Line, nude 0.5 mg 15 mN (1.5 g)	11/11 µm 20° Elliptical, nude 0.5 mg 15 mN (1.5 g)
Tracking force range Weight of unit Internal impedance DC resistance per channel Recommended load impedance per channel	12-18 mN (1.2-1.8 g) 16.5 g 3 ohm >10 ohm	12-18 mN (1.2-1.8 g) 16.5 g 3 ohm >10 ohm	12-18 mN (1.2-1.8 g) 5.3 g 3 ohm >10 ohm	12-18 mN (1.2-1.8 g) 5.3 g 3 ohm >10 ohm

	T 20	T 10
Type of unit Switch function Pick-up impedance Output loading	Transformer By-pass 2-4 ohm 47 kohm 150 pF	Transformer – 2-4 ohm 47 kohm 120 pF
Frequency response (nominal loading)	10-60,000 Hz +0.5 −1 dB 5-90,000 Hz +0.5 −3 dB	20-45,000 Hz +0.5 −1 dB 10-60,000 Hz +0.5 −3 dB
Phase linearity	±18° (15-20,000 Hz)	±18° (15-20,000 Hz)

	T 20	T 10
Square wave rise time Gain at 3 ohm/47 kohm Channel balance within	3 u.sec. 35 dB 0.2 dB	3 u.sec. 32 dB 0.2 dB
Channel separation Hum sensitivity referring to input	>50 dB 5-30,000 Hz 12 nV/$\frac{A}{m}$	>50 dB 5-30,000 Hz 15 nV/$\frac{A}{m}$
Transformer type Shielding Dimensions in mm (hxwxd)	Toroidal Permalloy + soft iron 40×80×122	Toroidal Permalloy 40×20×90

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accuracy in sound

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