X1 AND X3 HIGH-OUTPUT MOVING COIL CARTRIDGES.

ortofon
accuracy in sound

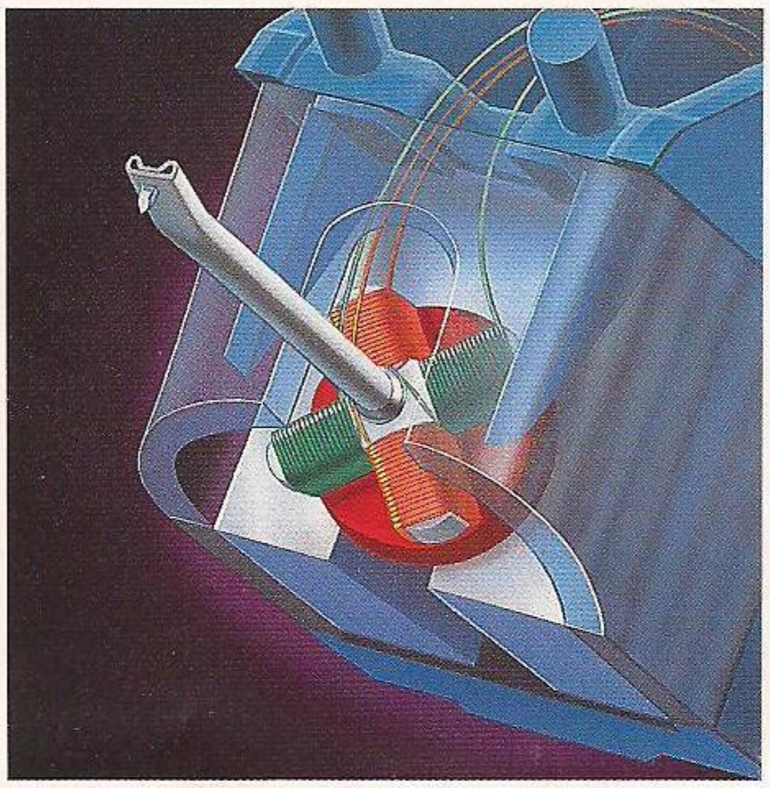
With the X1 and X3, Ortofon has proved that it is possible to produce a moving coil cartridge with the necessary high output to eliminate the need for an additional step-up device - without having to compromise the moving coil's construction principles and sound quality.
The result: pure, Ortofon Moving Coil Sound. And in a price category not previously offering this quality. In other words: Moving Coil Sound for Less Money.
Ortofon engineering is once more the key to high level performance. This is how it was achieved: -

THE MAGNETIC SYSTEM

The magnetic system is extremely compact and ultra-light, the Samarium Cobalt magnet weighing only 0.45 g as opposed to the usual 2 g. In addition, the pole pins in a moving coil design normally comprise three or four metal components. In the X1 and X3 cartridges, there is only one, which is in the form of an iron yoke encircling the magnet and weighing a mere 0.35 g. The normal weight is 2.2 g. This type of construction not only gives an extremely compact design, but it also provides an exceptionally powerful and homogeneous magnetic field as the yoke encircles and short-circuits the magnet. Finally, absolute phase is ensured by correct polarization of the magnet.

THE MOVING SYSTEM

The construction of the moving system and the components utilized are another reason why Ortofon X1 and X3 are superior to competitive High Output Moving Coil designs.
The moving system consists of diamond, cantilever, and armature with coils mounted to the damping system and suspension wire.
Let's take the armature first. To achieve the highest possible channel separation, we chose a cross shaped miniature armature for the coil windings. This armature is extremely rigid, and its shape allows for more windings than are used in traditional moving coil designs with lower output. Despite this, the armature weighs only 0.0012 g.
Each leg on the cross contains 230 coil windings (which is less than one half the amount used by competitive High-Output Moving Coil designs). With a thickness of only 18 µm, (which is one third thinner than normal) the copper wire is ultra fine, keeping the weight at a minimum. The combination of fewer windings and thinner wire permits a very low equivalent stylus tip mass - probably the lowest ever for any High-Output Moving Coil.



The tiny coils, mounted on the cross shaped armature, move in the powerful magnetic field created by the strong Samarium Cobalt magnet at the rear, and the iron yoke at the front.

The Styli: Ortofon X1 incorporates a diamond stylus with a finely polished Elliptical shape. The X3 model uses Ortofon's famous Fine Line shape, which gives extended contact surface to the groove wall, resulting in a frequency response right up to 40 kHz.
The Cantilever: a highly rigid aluminium cantilever.
The Damping System: the damping system in both models consists of one layer of asymmetrical butyl rubber to ensure the optimum combination of the shortest possible distance to the magnet, and good damping capabilities over the entire frequency range.
The Suspension Wire: piano wire - an Ortofon speciality - manufactured using a special galvanic process mastered only by Ortofon. The result is an exceptionally well-defined point of rotation for the armature. One of the secrets of the true Ortofon Moving Coil Sound.
In conclusion, therefore, the entire moving system weighing less than 0.2 g is ultra light!

THE LISTENING IMPRESSION

As one member of the Ortofon listening panel said, "This is the first High-Output Moving Coil cartridge that sounds like a real Moving Coil. The sound stage is spacious with depth of image. There is fine definition (and positioning) of the individual instruments".
And the reason for this: a powerful and, above all, tight bass, which emphasises the dynamic impression of both cartridges. Great openness in the medium and high frequency ranges. And typical moving coil depth in the stereo image.

IT'S THIS SIMPLE TO IMPROVE THE SOUND OF YOUR ENTIRE MUSIC SYSTEM

With an Ortofon X1 or X3 you need no extra, and costly, step-up device. This is because the high output voltage of the X1 and X3 matches the normal MM phono input on your amplifier - perfectly. The low mass of the cartridges, e.g. 4.1 g, ensures perfect matching to all tonearms.
So, all that's left now is to listen yourself to an Ortofon X1 or X3 High-Output Moving Coil cartridge and compare it to whatever you have right now - you are going to be surprised.

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Technical Data	X1-MC	X3-MC
Weight	4.1 g	4.1 g
Type of stylus	Elliptical	Fine Line, Nude
Stylus tip radius	18/8 µm	35/7 µm
Equivalent stylus tip mass	0.75 mg	0.75 mg
Frequency response +4/–1.5 dB	20-30,000 Hz	20-40,000 Hz
Output voltage at 1 kHz (5 cm/sec)	2 mV	2 mV
Channel separation at 1 kHz	> 22 dB	25 dB
Channel balance at 1 kHz	< 2 dB	< 2 dB
Compliance dynamic, lateral	13 µm/mN	13 µm/mN
Vertical tracking angle	23°	23°
Tracking force range	22-18 mN	22-18 mN
	2.2-1.8 g	2.2-1.8 g
Recommended tracking force	20 mN/2.0 g	20 mN/2.0 g
Tracking ability at 315 Hz (lateral)	60 µm	70 µm
Internal resistance	80 ohm	80 ohm
Recommended load impedance	47 Kohm	47 Kohm
FIM distortion	< 1.0%	< 1.0%

Ortofon introduced the world's first moving coil cartridge as far back as 1948. And ever since, the moving coil principle has been recognised as the finest reproduction form for analog sound. Throughout the years Ortofon has developed many new cartridges, refining the moving coil principle through patented systems and techniques. When you choose an Ortofon moving coil cartridge, you can be assured of the most advanced technology, and the best sound: the true Ortofon Moving Coil Sound.

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