

# JUBILEE Moving Coil Cartridge

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accuracy in sound



Ortofon was founded in 1918 by two Danish engineers, Axel Petersen and Arnold Poulsen. These two pioneers had one clear objective in mind - to put sound onto film, and with this, they established the Electrical Fonofilms Company A/S, which later was re-named Ortofon. A few years later, in the Palace Theatre, Copenhagen, they were able to present the first fully-synchronized sound film and in so doing, created a world sensation. The founders took out several patents and issued licences to film companies the world over for their "System Petersen og Poulsen", which is even to this day the basis for film with optical sound.

Until the second world war, Ortofon's growth was based entirely on the sound film. However, during the war and immediately afterwards, production was re-organized to include record cutting and reproducing equipment. The first Moving Coil cutterhead was produced as early as

1945, and the Moving Coil principle was then further developed to enable production of Moving Coil cartridges. The very first mono cartridge was introduced in 1948 followed by the SPU stereo cartridge in 1959. In 1969 Ortofon introduced its first Magnetic cartridge designed on the patented VMS principle, which together with the Moving Coil cartridges made Ortofon the worlds leading cartridge manufacturer.

Over the years Ortofon has designed and introduced more than 300 different types of cartridges and the completely new-designed MC Jubilee is presented in celebration of Ortofon's 80 years anniversary.

Throughout the years our motive has remained the same - to advance and produce equipment of the highest technical quality for the sound industry and the discerning music lover. That is why, for us, "Accuracy in Sound" is not just a slogan. It is our reason for being in business.

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## Introduction

For the celebration of Ortofon's 80 years anniversary we found the time had come to realize a dream of making a quite new design concept for an Ortofon Moving Coil cartridge.

How would it be possible to influence the most important part of this new concept - the sound - in such a way, that true lovers of analogue reproduction would find, that the Ortofon Sound - once again - had improved the listening experience to this outstanding medium. After many and serious investigations we came to the conclusion, that by utilising high quality materials with the best Ortofon design elements throughout the years we would reach our goal.

The response we received from test-listeners to the first prototypes of this new Ortofon concept was very positive and revealed the impression of a new dynamic, but well balanced sound image over the entire frequency range. It is our hope, that all our faithful customers will agree upon this statement and enjoy their precious collection of records even more when listening to the Ortofon MC Jubilee cartridge.

## New design elements

The new appearance of the design is a result of a co-operation between professional industrial designers and the Ortofon Chief Engineer Per Windfeld, where the most advanced technology and processing should have a very high priority. During the developing process it became more and more evident, that the requirements to both outside as well as inside parts became so demanding with respect to details and finish, that usual manufacturing procedures were insufficient.

The only method that would meet our requirements, was found to be the so-called Metal Injection Moulding process (MIM). This process is based on very fine metal powders being mixed into a polymer and injected into a mould. After moulding the parts will pass heat treatment and sintering processes, and the result is solid metal parts of either stainless steel to be used for the outer design or highly conductive iron for the magnetic circuit. Very low wall thickness together with miniaturisation of the magnetic circuit made it possible to keep the cartridge weight as low as 10,5 gram.

All parts in the Ortofon Jubilee model are pressed together to an almost solid unit, so no use of screws and glue was necessary. As mentioned, a new unique magnetic circuit was developed in order to concentrate magnetic fluxlines in the airgap with the smallest amount of leakage in the circuit. The solution was to place the armature and the damping system inside the Neodymium magnet itself. By doing so we gained a raise in output voltage of 35%, compared to the MC Rohmann cartridge. The wellknown Ortofon WRD-dampingsystem (Wide Range Damping) is also implemented in the MC Jubilee cartridge, controlling the high- and low frequency damping separately.

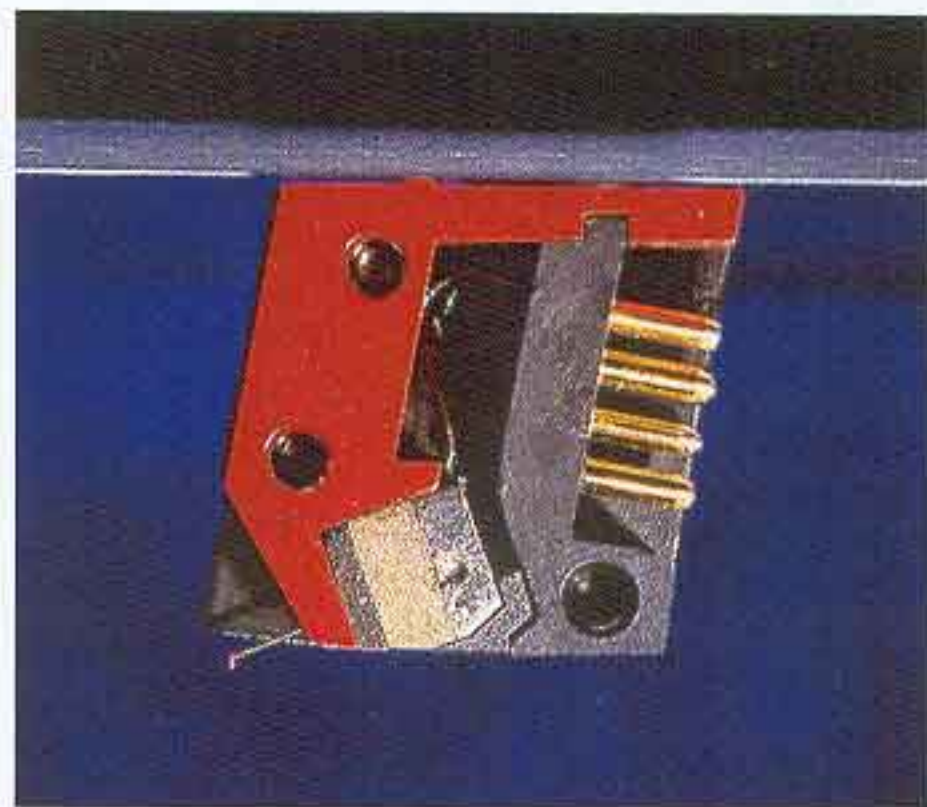
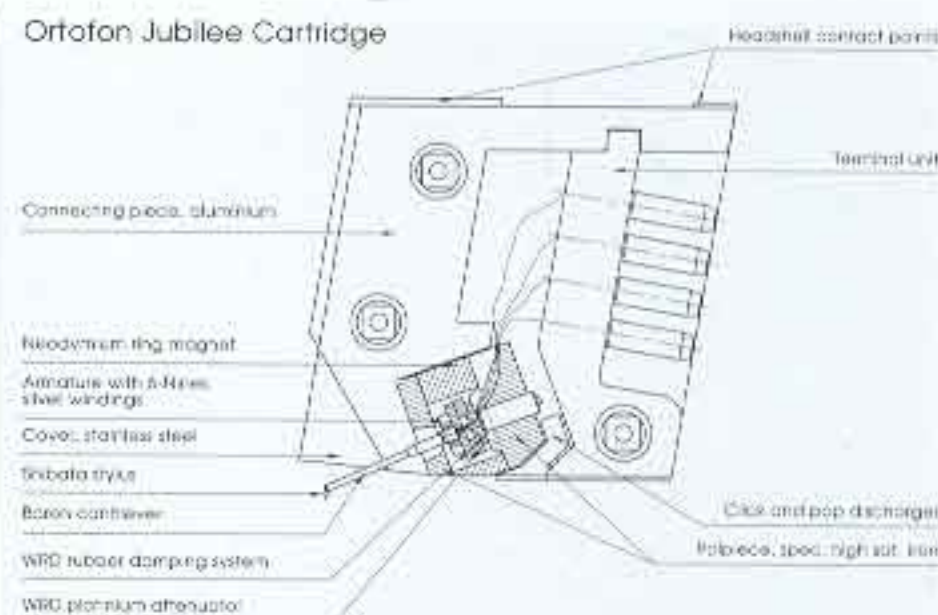
The effective mass has been reduced in the new stylus/cantilever system by using a very thin Boron rod. This material is extremely stiff and even more lightweight compared to aluminium. Besides is the velocity of sound almost 3 times higher compared to that of aluminium. Combined with the nude high-polished Shibata diamond stylus at the end of the cantilever, we have developed one of the new elements responsible for the new sound. 6-nines (99.9999%) pure silver is used for the coils on the armature where-by the DC resistance has been kept as low as 5 Ohm.

## Design features

When you have a look all around the Ortofon MC Jubilee cartridge you will find several interesting new things. First of all we hope you like the visual design. But we have also done our utmost to make it practical in use. The stylus is well protected against accidents, but at the same time very visible for searching the groove. The terminal pins have been pressed forward into the housing to give more space for the lead wires between the cartridge and tonearm/head shell terminals.

On the bottom side of the cartridge a conductive carbonfibre part will help eliminate electro-static clicks from the record. Besides, this part is lower than the metal parts in order to protect the record if the cartridge by accident should be dropped. The upper side of the cartridge has 2,5 mm threaded holes for mounting and 3 elevated points in triangular position to stabilize contact to the head shell.

When mounting the Ortofon MC Jubilee cartridge on tonearms with fixed head shell, it will still be possible to adjust the vertical position of the cartridge about 2 degrees with the screws, because the point between the screws is acting as a pivot. The two long contourlines seen on the front of the cartridge will give a very precise reflected image in the record for this tilt alignment.



## Technical Data

Output voltage at 1000 Hz, 5cm/sec.	340 $\mu$ V
Channel balance at 1000 Hz	< 1 dB
Channel separation at 1000 Hz	> 27 dB
Channel separation at 15.000 Hz	> 20 dB
Frequency range at - 3 dB	20 - 60.000 Hz
Amplitude response	20 - 20.000 Hz, +1.5/-0 dB
FIM distortion at recommended tracking force DIN 45.542	< 1%
Tracking ability at 315 Hz at recommended tracking force	100 $\mu$ m
Compliance, dynamic, lateral	16 $\mu$ m/mN
Stylus type	Nude Shibata
Stylus tip radius	r/R 6/50 $\mu$ m
Equivalent stylus tip mass	0.22 mg
Tracking force range	20.25/2.0-2.5 mN/gram
Tracking force, recommended	23/2.3 mN/gram
Tracking angle	20°
Internal impedance DC resistance	5 Ohm
Recommended load impedance	> 10 Ohm
Cartridge body material	Stainless steel/aluminium
Cartridge colour	Purple/black
Cartridge Weight	10.5 gram