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SPU Classic
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SPU 90th Anniversary

Content


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Why these four SPUs

Being the inventor of the world famous SPU stereo cartridge in 1958, most music lovers, even today, find that there is no name like Ortofon which is more involved in the history of analogue reproduction. This year we decided to give our SPU fans around the world an opportunity to get a collection of the four most famous SPUs, each of them a very special collector's item. These four SPUs were limited editions in their days (except for SPU Classic). These four cartridges represent the diversity of technical solutions and materials and reflect the non-stop technological development through the last 50 years. The fact that Ortofon has kept the SPU in production for half a century says a lot about the enduring rightness of its design.

The SPU introduced in 1959, pointed the way for the next 50 years of high-end cartridge design: a generator comprising two low-impedance coils, wound with very fine copper wire and crossed in such a way that the two walls of an LP's stereo microgroove can generate two discrete signals with maximum separation. In the 60s, the popular SPU G-house model gradually evolved to become the SPU Classic. The SPU Classic embodies the essence of the original Moving Coils and is known for its dynamic and powerful sound reproduction.

The SPU Gold Reference, introduced in 1989, was limited to 335 units. The SPU Gold Reference's major features included Ortofon's famous Replicant 100 stylus, 99.9999% pure copper armature windings and terminal leads and a slightly modified damping system. Sonically, the Gold Reference is a genuine SPU, known for it's beautiful fluid midrange, but with just a taste of extra detail.

The SPU 85, from 2003, was a limited production of 500 units. SPU 85's unique characteristics included an outstanding housing made of Japanese Hida Beech wood, famous for its strength and hardness. In order to influence sound from the motor system, a new wire concept for the armature windings called "AUCURUM" was developed. The basic material here is a specially developed composite consisting of a very pure copper and gold, creating extraordinarily high conductivity and environmental resistivity.

The SPU 90th Anniversary, from 2008 was limited to 500 units. What makes the SPU 90th Anniversary unique is the combination of following four elements: a completely new patent-pending magnetic system, the inclusion of the renowned Field Stabilizing Element (FSE) system, the direct connection between the generator system and the wooden housing (ensuring extremely high internal damping), and finally the use of the revolutionary Selective Laser Melting (SLM) manufacturing technique. SPU 90th Anniversary provides reproduction of sound that is unsurpassed in its neutrality, detail and dynamic range.

These 4 cartridges are made exactly as the original models, and are as genuine as the original production units. All materials and techniques have been preserved during the manufacturing process.

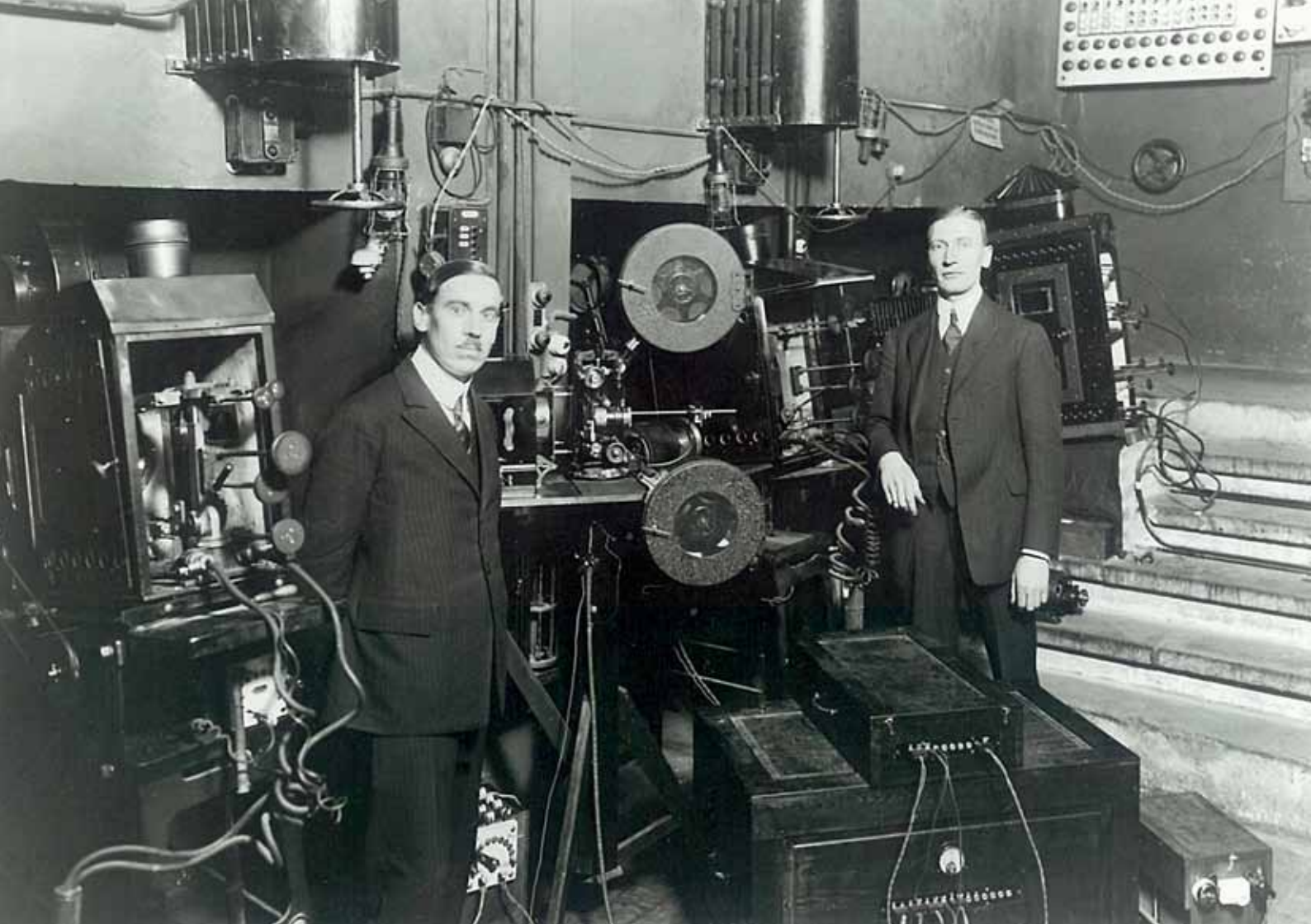
Overview

SPU Classic 1959/1987	
Cantilever	Aluminium
Stylus	Nude spherical R18 µm
Armature-wire	Copper
Magnet	Alnico
Housing	Aluminium-Magnesium alloy

SPU Gold Reference 1989	
Cantilever	Gold plated Aluminium
Stylus	Ortofon Replicant 100 r/R 5/100 µm
Armature-wire	99,99999% Copper
Magnet	Alnico
Housing	Aluminium-Magnesium alloy

SPU 85 2003	
Cantilever	Aluminium
Stylus	Nude elliptical r/R 8/18 µm
Armature-wire	Gold + Copper
Magnet	Neodymium
Housing	Hida Beech + Urushi

SPU 90th Anniversary 2008	
Cantilever	Aluminium
Stylus	Nude elliptical r/R 8/18 µm
Armature-wire	Copper + Silver
Magnet	Neodymium
Housing	Wood powder + Phenolic resin



Heritage & new technology: Ortofon continuous development since 1918

In the beginning was the sound track…

On the 9th of October 1918, the two Danish engineers, Axel Petersen (1887-1971) and Arnold Poulsen (1889-1952) founded the Electrical Phono Film Company with a few capable and foresighted businessmen who would support the organization financially. Their aim was to explore the possibility of high-class recording and developing one of the first synchronized sound film systems in the world. Under primitive conditions, the two Danish engineers and their small staff had to solve a number of what were considered insuperable problems.
The invention of electrical recording by an Edison Phonograph and sound reproduction through earphones were the first conquests. The team had to engineer most of electrical and mechanical components itself and owing to the insufficient sensitivity of the film, the team had huge challenges in the field of optical and photographic recording.

After 5 years, however, the first film was produced. On the 12th of October, 1923, the first sound film recorded indoors was shown at the Palace Theatre in Copenhagen. It was the first real sound film, recording using the “variable area” method. For the first time the name of System Petersen and Poulsen was on film strip. The name was later to be known all over the world.

At that time two films were run simultaneously - one with pictures and one with sound (i.e. it was necessary to synchronize the two machines). Nevertheless the first performance was met with enthusiasm, and it became the method for presentations in the whole of Europe while licenses were established for this technology in many other countries. Later in the twenties the System Petersen and Poulsen was also adopted by the largest American film productions.
By that time, the problem of synchronization of picture and sound on the same strip was solved. This became a common requirement on the part of the producers to simplify the copying and editing of the films.

Also within this field the two Danish engineers succeeded in achieving eminent results. Several of the cameras and recording heads constructed then for cinema projectors, were still employed as late as 1968. Additionally a number of other appliances, such as condenser microphones, dynamic compressors, oscilloscopes, optical instruments, amplifiers for reproduction and studio equipment with mixing and editing tables were developed.

The fact that improvements can be noticed without any advance publicity was certified at a Danish premier in 1944. The press wrote that the film was boring but the sound surprisingly good. Electrical Phono Films A/S had constructed a new dynamic compressor which was used for the first time; later this compressor was patented.

Cutting edge cutterheads

Also the disc recording industry had been supplied with appliances by the Danish inventors. A new system of cutterhead for the gramophone industry and the amplifier were developed in secrecy during WW II. The cutterhead was revolutionary because the level of registration of the oscillations was raised from 5 kHz to 14 kHz. At the end of 1945 the Danish disc recording company "Tono" was able to cut records on the new equipment. No existing pickup system, however, was able to reproduce so high a sound quality that this cutterhead produced. So the pioneering Ortofon mono pickup and pickup arm were developed in 1948 and then patented in many countries. In a few years it became world famous.

In 1946 the old name of the company was changed to PhonoFilm Industry A/S and in 1951 Ortofon A/S was founded as a trading company under PhonoFilm Industry A/S umbrella. This was done as a consequence of a considerable increase in demand from the whole world. At the same time ORTOFON was registered as a trade mark for all the products of the company and a guarantee for imported articles was made.

A strong and efficient cooperation between Ortofon A/S and other high-class industrial undertakings within the acoustical line had developed a comprehensive world trade attended to by 36 agencies and many technical and commercial undertakings. The severe demand of high-quality products of Mr. Petersen and Mr. Poulsen dating from the infancy of the sound film was still such a decisive factor that all kinds of raw materials were controlled before they were put into production.

Setting the bar high for the cartridges

As previously mentioned, Ortofon started making cutterheads for record manufacturing companies in 1945 and they became adopted by companies all over the world. From being a development laboratory for tone films (the Petersen and Poulsen System) Ortofon became an important force in fostering the gramophone industry, among other things by developing a Moving Coil cutterhead for mono cartridges which was followed by various models of mono as well as stereo cutterheads. Ortofon used its market knowledge and technology from its renowned cutterhead production to make very fine cartridges. The first Ortofon cartridge, the MC Mono-A cartridge was developed by Holger Christian Arenstzenin 1948.

In 1958 the first SPU - Stereo Pick Up came to the market.

A New Moving coil lightweight model, MC 20, was introduced in 1977 and two years later the MC 20 MK II came. The MC 20 MK II became the first cartridge to be implemented with the patented Wide Range Damping System which insured very high tracking ability. Both models were awarded by the Japanese Grand Prix Committee.

Since the 80s, the development of Moving Coil cartridges became highly influenced by major technological progresses with regard to materials and processing technology. Very strong magnetic materials like Samarium Cobalt and Neodymium almost decimated sizes of magnetic circuits and even increased cartridge output data at the same time. New thin cantilever rods made from very hard Sapphire, Boron and Ruby mounted with exceptional new diamonds profiles were implemented as well as extremely pure Japanese copper and silver wires for MC-coils. Processing technology for molding complex structures in either ceramic or pure metals, based on the special Metal Injection Molding process, created completely new design possibilities and has successively been introduced by Ortofon suppliers in either ceramic, stainless steel or pure iron parts. In 2004 Ortofon started using a wood-powder resin material for new SPU-G housings as well as for the Rondo models.

At the end of 2008 Ortofon introduced a completely new model that was designed in cooperation with the Danish Technological Institute. The SPU 90th Anniversary phono cartridge was thought as a celebration of a significant milestone in the Ortofon history and was the result of a research spanning the Ortofon technological heritage and the emergence of new manufacturing technology called Rapid Manufacturing.

Ortofon has a long history and a rich heritage, but the most important point is to have something to offer today's consumer. We preserve our heritage by continuously investing in technology and product development. It is our philosophy that even a traditional product like the SPU cartridge can benefit greatly from new technology and industrial competences.

Ortofon History – a journey through the years

Ortofon timeline (1957– 2010)

1957-59

Ortofon develops its legendary SPU - Stereo Pick Up. The target audience is primarily professionals, e.g. the Danish State Broadcasting Company, the Swedish State Broadcasting Company and Deutsche Grammophon.

1968

Ortofon makes a statement: “The Ortofon Company will continue their line and still investigate the limits of what is possible”.

1969

The first magnetic cartridge the M-15 is launched. The cartridge is constructed on the Variable Magnetic Shunt (VMS) generating system.

1970

The production facilities are moved from Copenhagen to their current location at Nakskov in the southeast of Denmark. The new factory has component production line and assembly stations.

1976

The MCA 76 pre-amplifier is developed in order to match the Moving Coil cartridges which were Ortofon’s primary designs at the time.

1979

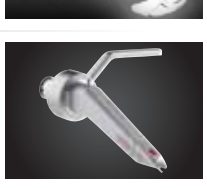
The well-known Ortofon “Concorde“ design gained the Danish Design Award for its elegant direct integration into tonearms.

1981

Ortofon introduces the world’s first low mass magnetic cartridge with a very high compliance and the net weight reduced to only 2.5 grams.

1984

Ortofon expands into a new area of business: the silver coloured Concorde Pro and OM Pro are engineered. The new products combine the sound quality with the ruggedness. The target group is the professional DJs.



80’es

Ortofon B2B division is established under the name Scan Micro. Scan Micro starts the production of diamond styli.

1987

The SPU Classic is reintroduced.

1988

The MC 70 Anniversary Moving Coil Cartridge is introduced.

1989

The SPU Gold Reference and MC 2000/3000 are engineered.

1992

Mr. Robert Gudmandsen, known by most as Mr. SPU, the father and founder of the Ortofon large pickup program celebrates his 50th anniversary working at Ortofon. The SPU Meister is developed to celebrate this occasion.

1993

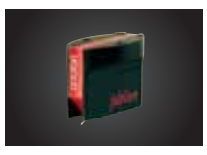
Ortofon celebrates its 75th anniversary by introducing the top model Moving Coil cartridge MC 7500.

1996

SPU Meister Silver is launched.

1998

Ortofon celebrates its 80th anniversary with the completely newly designed MC Jubilee together with the SPU Royal.



2000

On the day of Johann Sebastian Bach’s 250th birthday, Ortofon launches the Kontrapunkt b and Kontrapunkt a moving coil cartridges. Kontrapunkt Series was completed with introduction of the Kontrapunkt c and Kontrapunkt h in 2003.

2003

To celebrate Ortofon’s 85th anniversary the SPU 85 and the LH 8000 head shell are released.

2007

The 2M Series consisting of 2M Red, 2M Blue, 2M Bronze and 2M Black are engineered by the highest standards. The 2M Series is a perfect example of the uncompromising commitment of Ortofon to provide the most precise and accurate reproduction possible without colouration. Also the 2M series represents some of the Ortofon design principles, working with shapes, simplicity and intuitive user friendliness.

2008

Ortofon celebrates its 90th anniversary. The MC Windfeld is developed, using the new state-of-the-art technology. This highly advanced design is seen as a tribute to Ortofon’s departing engineer Mr. Per Windfeld, who had been a feature of the high-end culture as head of the R&D for more than 30 years.

2009

Cadenza, SPU 90th Anniversary and MC A90 are launched. Ortofon has pioneered the use of the Selective Laser Melting technique for manufacturing of phono cartridges.

2010

Ortofon B2B division ScanMicro is re-established under the new name Ortofon Microtech. Ortofon Microtech is producing components and conventional bone conductors for the hearing aid industry.

2003

1993

1979

1981

1998

2007

2010

1984

2000

1989

2008

1996

Cartridge manufacturing: a culture of excellence in 5 steps

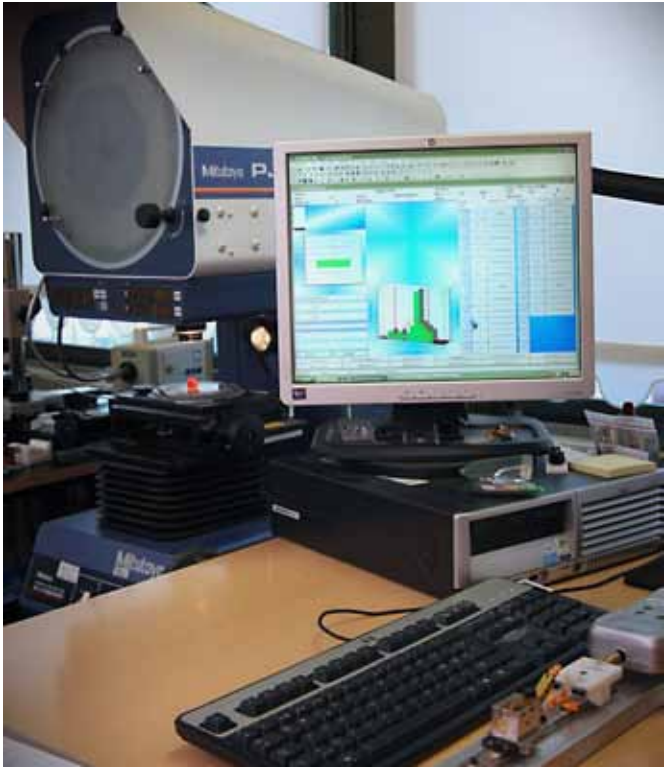
All Ortofon cartridges are manufactured at our factory in Nakskov. Originally the production facilities were located in Copenhagen, but in 1970 the new factory with component production line and assembly stations was opened in Nakskov in the southeast of Denmark. Since then all Ortofon cartridges have been manufactured in Nakskov.

1. In-house product development

Research and development is done with the company's own engineers supported by a strong network of acoustic and technological know-how and industrial design in Denmark. Ortofon benefits from being established in Denmark, a country recognized for its strong tradition in acoustics and its wealth of other high-end manufacturers, who make consumer products, hearing aids and acoustic measurement equipment.

2. A portfolio of suppliers of small components with fine tolerances

Our company is embedded in the culture of small precision components and devices. We have strong industrial roots and a world-wide network of suppliers. The supplier portfolio (several of whom are also suppliers to the Swiss watch industry) has been developed over many years and is one of our most important assets. Raw materials are tested for quality prior to the production process, to insure the highest quality final results.

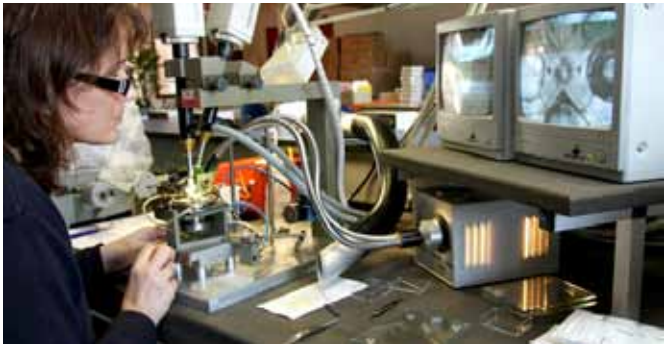


3. Key components are made at the factory

Ortofon has years of experience in the production of technical rubber components and suspensions. As part of this process, we've developed skills and know-how in unique compounds for technical rubber with excellent acoustic properties. All Ortofon technical rubber production takes place at the factory, where production is set up for specialized items. We have laboratory equipment for own compound production, which means Ortofon has complete control of the quality of the production chain.

4. World class micromechanical assembly

A major part of our micro assembly is carried out under a microscope or using vision equipment. Modern machinery is combined with experienced operators, so human craftsmanship is delivered with uniform industrial quality.



The micro assembly is done by our experienced operators, supported by in-house made tooling and a whole culture of working with small tolerances and high precision. The result is products with high performance characteristics.

When a new product is transferred to the factory from R&D, several trial productions are made until we are sure that everything is working perfectly.

5. Extensive finished product control using modern equipment and principles

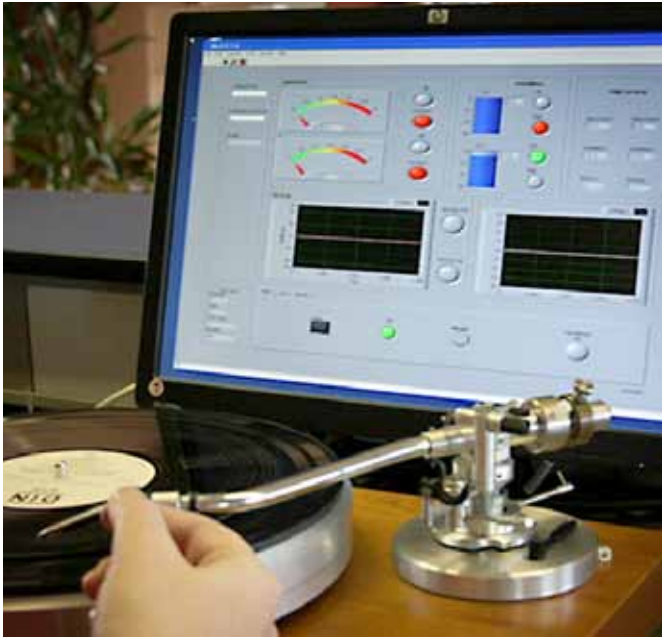
The Ortofon measurement testing set-up is a PC based testing system. Prior to testing, the cartridge is mounted on a special headshell that has been optimized for repeatable and reproducible use.

After the system is hooked up, a calibration sequence is initiated and the data stored. The sequence compensates for changes in temperature, humidity etc. The calibration sequence also compensates all cables, impedances, gain etc. in the measurement chain from the headshell to the PC.

After testing, the product is approved by the quality control if the product performance data meets the given test specifications. All Ortofon cartridges are subject to quality control and test.

To ensure the quality and consistency of the Ortofon measurement system, the Measurement System Analysis is run on a frequent basis.

The necessary adjustments and improvements of the test system are consistently implemented in order to ensure the quality of the test system and its performance in accordance with Ortofon requirements and specifications. The Measurement System Analysis (MSA) is a specially designed experiment targeted to identify the component(s) responsible for producing variables in the measurement.



The Ortofon SPU – a fifty years product story

No other company has ever retrained a phono cartridge model in their product range for so many years. The SPU was used by early broadcasting companies among whom the Ortofon brand name was already well known from the first moving coil system - the Ortofon mono system in the small black A-housing. The so-called “Ortofon sound“ became synonymous with the sound from the SPU, at an early stage.

But with no other cartridge over the course of half a century, we have ever had to take so much care in respecting this original sound when improving technical data, as with the SPU model. As a result and in order to show considerations for this goal, you will after 50 years still find the basic visuals, the original design, as well as the original elements in the construction of the magnetic circuit kept fully intact.

Evidently the product has changed throughout its evolution. New possibilities in regards to housing materials, diamonds and magnetic system have been employed to improve the SPU and its performance whilst at the same time we remain faithful to the original concept. It is also clear that in a period of 50 years certain components will be changed as the suppliers no longer make them and replacements must be found.

But let us for a moment return to where it all began, when the SPU was launched back in 1958.

The term “SPU” stands for “stereo pick-up” as phono cartridges were called “pick-ups” in the 1950s and 1960s.

The original SPU was introduced in response to the demand for cartridges to reproduce the new stereo records. Based on Ortofon’s already 10 year old technology and experience in mono cartridges, the SPU immediately set the standard for professional and audiophile applications. Mr. Robert Gudmandsen, one of Ortofon’s then leading engineers took a principal part in developing this cartridge. 10 years before, Mr. Gudmandsen had been deeply involved in the basic Ortofon Mono MC system. At that time Mr. Gudmandsen of course did not have the elaborate facilities that now make up the company’s development. Nevertheless his flair for a musical sound reproduction and the touch of a genius enabled him to create THE cartridge to survive all others.

The sound of the SPU cartridge is characterized by a rich bass and a transparent treble range plus those extra qualities which are so hard to define, but so easy to appreciate when they are realized.

Back in 1958 the Ortofon SPU sounded like no other cartridge because it was way ahead of its competition. Today the SPU still has a sound that is definitely its own and it enjoys a remarkable following - in particular among audiophiles whose systems are comprised of vintage valve equipment and horn or reflex speakers.

Parallel to this development, Ortofon developed a stereo cutterhead for mastering records, and the Ortofon expertise and development activities in making transducers for analogue reproduction equipment made new standards for the area in those days. It is also important to remember that Ortofon during and after the second world war had specialized in making silver spraying of lacquer discs and equipment for high speed nickel electroplating of matrices for gramophone record production.

A very important element based on technologies from said nickel painting process was right from the beginning incorporated into the SPU as a very fundamental part, responsible for the suspension of the oscillating system. This element consisting of cantilever and armature has never been surpassed by any cartridge manufacturer, and we are convinced, that the aforementioned "Ortofon Sound" to a great extent was influenced by this element. Because of the very low impedance and the very low output, the first SPU cartridge, the SPU-GT, had a small transformer integrated with the cartridge units in the GM- housing, yielding about 7mVolt at 5cm/sec suitable for an MM input sockets with 50 kOhm loading.

The SPU cartridge unit was also available without transformer in the original A-housing from the mono-systems. For the two different A and G housings Ortofon developed a program of tonearms among which the RMA/RMG 212 and 309 became very well known.

For more than 20 years the SPU cartridge models were kept unchanged. In 1980 however, a luxury model for connoisseur, the SPU Gold, was introduced in a mahogany box with a 24 carat gold plated name plate inside the box. The cartridge was featured a gold plated finger lift and Ortofon logo. Silver windings were used on the armature as well as for the terminal leads. The system was awarded in Japan with "the component of the year prize" for best foreign product. But still, nothing that could change the performance and "Sound" from the basic image was made.

In 1989 the SPU Gold Reference was introduced, and the first step of improving the "sound" by utilizing the modern Ortofon developed Replicant stylus was taken. This stylus shape, very close in cross section and radii to the cutting sapphire, reproduced the modulations in the groove with an unheard amount of details in the sound.

In 1992 Ortofon wanted to celebrate Mr. Robert Gudmandsen, because of his 50 years of work for the Ortofon. At that time he had already got the nickname Mr. SPU in Japan, because of his basic and innovative work on the mono moving coil and later stereo cartridges. Mr. Gudmandsen was also personally awarded by the Danish Queen Margrethe II, and Ortofon decided in honor of Mr. Gudmandsen to launch the SPU Meister cartridge with Mr. Robert Gudmandsen signature printed in both A and G-models.

Robert Gudmandsen on the right and then-CEO of Ortofon Eric Rohmann on the left.

The new features for this cartridge, again fully respecting the original concept, involved a wooden box of noble tree - a dedication from Mr. Gudmandsen to the owner of the cartridge. An important new technical data was a raise in output of about 75%, by introducing the Neodymium magnetic circuit. Further the very pure 7-Nines copper was now used for the armature windings.

When the SPU Royal N/A and GM models were released in 1998 it was also done not to forget the basic Ortofon product in 40 years among the great number of other successful MC models - all being highly indebted to the original ideas in the SPU cartridge. The SPU Royal N cartridge with its half inch adaptor has provided a new flexibility and ability for the customers in mounting the unit in headshells, as well as in a wider range of tonearms.

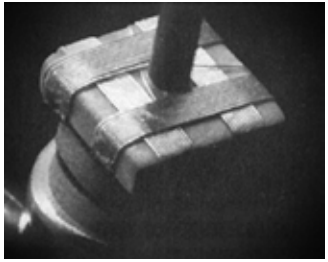
A key SPU feature is an integrated headshell, designed to mount directly into classic tonearms with detachable headshells - tonearms such as the SME 3009 and 3012, and other tonearms with similar “universal” tonearm mounts. Quite simply, there is no finer complement to a classic tonearm with a detachable headshell than an Ortofon SPU.

The faithfulness against the sound from the ancestors is still there, whether it is using a new silver/gold alloy for the armature, using the Replicant stylus, or using Selective Laser Melting manufacturing technique.

SPU Classic

The SPU is the only Ortofon stereo cartridge that has survived since 1959 and from all over the world gained a reputation second to none for an outstanding analogue sound reproduction.

The original SPU model, engineered by Mr. Robert Gudmandsen in 1959, introduced low coil impedance concept. As a basis for reproducing superb high frequencies, this concept has been improved and refined in the decades since.



Moving coil wound on armature.

In the early sixties Ortofon was the moving coil manufacturer with the SPU range comprising three models: E (elliptical stylus), G (standard SME-fit G-shell) and T (with or without step-up transformer). Over time the SPU in a G housing prevailed and gradually became the popular SPU Classic.

SPU of 1959 pointed the way for the next 50 years of high-end cartridge design: a generator comprising two low-impedance coils, wound with very fine copper wire and crossed in such a way that the two walls of an LP's stereo microgroove could generate two discrete signals with maximum separation.

SPU Classic was reintroduced in 1987. The model of 1987 was incrementally improved since its inception in 1959, as new materials, manufacturing techniques and processing technologies were developed, though 18µm Nude spherical stylus and Aluminium-Magnesium alloy housing remained untouched. However and in spite of these developments, Ortofon has over the years been very conscious of preserving fundamental elements in the construction responsible for the basic SPU sound. All processes are still made manually.

The SPU Classic embodies the essence of the original Moving Coils and is known for its dynamic and powerful sound reproduction where the special SPU character is most pronounced and original.

Equipped with Nude spherical stylus the SPU Classic has sound that is both rich and silky. With its linearity and full body, this cartridge has remained a favorite throughout the years, both for modern and vintage high-end applications. This cartridge is a perfect solution for the playback of both early and modern and contemporary stereo recordings.

The Ortofon SPU Classic simply refuses to die.

SPU Gold Reference

The SPU Gold Reference is the member of Ortofon SPU family of 1989. Its major features include an Ortofon Replicant 100 stylus, 99.9999% pure copper armature windings and leads, and a slightly modified damping system. These improvements have made it possible to reduce the tracking force and obtain a more linear frequency response. Sonically, the Gold Reference is still a genuine SPU of which Mr. Gudmandsen would be proud.

In order to satisfy the requirements of owners of vintage equipment, the SPU Gold Reference was introduced in two different housings with identical electrical specifications. The GM housing had the same dimensions as standard shells and fitted into Ortofon's classical RKG 309 and RMG tonearms.

The SPU Gold Reference requires a tonearm which is rigid, devoid of resonances and able to counterbalance a cartridge weight of 32g in this GM version.

The choice of stylus profile

The actual shape of the contact point of the diamond stylus on the groove is vitally important for accurate sound reproduction, as is the profile of the contact area. To allow tracking of the high frequency information, particularly in the critical inner turns of the groove, it is mandatory to employ a slim stylus profile.

The very first generation of SPU cartridges was equipped with spherical styli. As soon as elliptical shapes could be produced, such a stylus type was incorporated in the design. The original SPU Gold was one of the first cartridges to employ a true elliptical stylus ensuring the lower record wear.

Like the other Ortofon top-of-the-line cartridges, the stylus for the SPU Gold Reference has been designed and produced in close collaboration with Ortofon Swiss diamond supplier, Fritz Gyger. Its shape is closely aligned to the profile of the original cutting stylus and its quality is the very highest possible. The front facet of the Ortofon Replicant 100 stylus is flat, which allows maximum space for the stylus to move freely in the groove. The rear contact surface of the diamond has three facets to reduce stylus volume (and thus the mass) while maintaining the strength and integrity of the diamond. The contact area is highly polished in order to achieve a perfect radius. And the stylus profile along the 90° V-track of the groove is shaped to make the highest degree of contact ever made possible by a playback stylus - surpassed only in this respect by the cutting stylus itself.

Cantilever, armature and damping

With the selection of the Ortofon Replicant 100 stylus, we have chosen the diamond whose geometry permits tracking of even the highest-frequency groove information.
Following the SPU tradition, the cantilever of the SPU Gold Reference is cylindrical and made from aluminium which has been gold plated by means of a metal evaporation process to match the other metal parts of the cartridge.

The relatively large, square armature ensures a more than adequate output voltage of 0.2 mV plus, while the low number of windings make the cartridge a genuine low-impedance design, featuring an internal resistance of only 3 Ohm. A further improvement of the sonic qualities is obtained by means of 99.9999% pure copper for the windings and the litz wire leads in the GM housing.

One of the secrets behind the characteristic Ortofon SPU sound is the rubber bearing which dampens the cantilever movements. Consequently, this bearing is of exactly the same type as in the standard SPU cartridge. In order to improve the frequency linearity, the suspension wire has been made a little longer.

SPU 85

In 2003 Ortofon celebrated its 85 year anniversary by launching this SPU cartridge only produced in a limited number of 500 units.

An idea was to create an outstanding kind of housing made of Japanese Hida Beech wood, famous for its strength and hardness. For the exclusive surface treatment the 6000 years old Japanese Urushi lacquer method was chosen in order to achieving a hard, resistant and beautiful multilayer surface in dark maroon colour.

Japanese Hida Beech wood
+ Urushi lacquer

Additionally in order to influence sound from the motor system, Ortofon has succeeded in developing a new wire concept for the armature windings called “AUCURUM”. The basic material here is specially developed composite consisting of a very pure copper and gold, creating high conductivity and environmental resistivity.

The expectations about influence on sound reproduction from this very beautiful anniversary design (yet with all the previous classic elements preserved in the motor system) now had to be examined by the Ortofon Listening Panel. SPU 85 prototypes were made to be compared to SPU systems mounted in standard metal housing with the same motor system.

The Ortofon Listening Panel proclaimed: Very charming, open, dynamic, straightforward and present intermediate tone range between 200 and 1500 Hz typical for the SPU sound. The wooden housing first of all seems to have strong influence especially in the range from say 4000 Hz and up, resulting in a very pleasant integration with intermediate frequency range compared to the metal housing. The musical integrity obviously tends to be improved by the lower Q for resonance in the wooden housing compared to the metal.

SPU 85 is an integrated phono cartridge with standard Ortofon/ SME connector. Its high mass permits only mounting in heavier type tonearms. To obtain all benefits of SPU 85 superb performance capabilities, it is important that the tonearms with which it is used be as rigid as possible with a minimum of resonance. It must be correctly mounted and adjusted. Mount the SPU 85 on your tonearm and balance. Set tracking force between 3-4 grams, e.g. 3,5 grams. After setting tracking force, adjust antiskating. Please consult the user instructions for turntable/tonearm.

SPU 90th Anniversary

Ortofon SPU 90th Anniversary – a best-in-class commemorative cartridge to celebrate Ortofon's 90 years of masterful analog research and technology. Since the advent of moving coil technology, the SPU series cartridges have always remained near and dear to both those looking for the most musical and refined sound quality, as well as those looking to recapture the essence of authenticity in a nod to some of the best audio components of all time.

With the SPU 90th Anniversary, the bar is raised for both its modern and vintage counterparts. New features put the SPU 90th Anniversary on a new level.

Much like Robert Gudmandsen's revolutionary ideas which originally brought the SPU cartridges to market in the 1960s, endless research and conceptual design has been placed into this special anniversary model. For the first time in history, the SPU has been graced with a completely new patent-pending magnetic system, which retains all of the characteristics that put its brethren in a class of their own, while at the same time expounding upon its strengths to provide reproduction of sound that is unsurpassed in its neutrality, detail and dynamic range.

Another first is the inclusion of the renowned Field Stabilizing Element (FSE) system, which consists of a small cylinder of conductive material placed strategically inside of the magnetic system. FSE guarantees that the force field within the system will remain stable at all times regardless of the moment of the armature. This technology was first introduced by recently retired chief engineer Mr. Per Windfeld, in his widely acclaimed Kontrapunkt series and in the present top line cartridge, the MC Windfeld.

What this means in practical application is that not only will FSE minimize dynamic and intermodulation distortion, but it also will allow for greater dynamics, absolute clarity and depth of sound for truly awe inspiring sonic performance.

Revolutionary manufacturing process

The mechanical structure of the SPU 90th Anniversary cartridge has also been re-engineered, as well as many of its internal assemblies. At the mechanical heart lies a revolutionary customized SLM (Selective Laser Melting) manufacturing technique in which micro particles are laser-welded together, layer by layer. This high technology and high precision process eschews traditional techniques to provide high rigidity and a body density resulting in the further reduction of unwanted resonances while still maintaining exacting figures for cartridge mass. SLM manufacturing also enables the consolidation of components to allow for a design devoid of unnecessary material.

In this cartridge, a one piece body makes the direct connection between the generator system and the wooden housing ensuring both a perfect rigid connection and extremely high internal damping.

A nude elliptical diamond stylus graces the aluminium cantilever, representative of the legacy created by SPUs past, along with a black painted, grinded wood body.

Also adding to the sonic performance of the SPU 90th Anniversary is nothing but the best internal coil wiring, comprised of silver plated ultrahigh purity(6NX) copper wire, to ensure that each and every movement of the stylus is captured faithfully without loss. The internal terminal wiring is made of ultrahigh purity (6NX) silver wire, with gold plated terminal connectors.

Gracing the exterior of the SPU's timeless and elegant design is a print of the Golden Horns of Gallehus, two ancient Danish artifacts discovered in the 17thand 18th centuries, whose inscriptions were believed to be dated as far back as the 5th century. These horns, made of gold, were stolen in 1802 and melted down, and consequently were recreated from sketches years later for display in Denmark's Moesgaard and Kongernes Jelling Museums. Much like the history of the SPU cartridge, which has been through numerous incarnations, tenacious determination allowed these horns to be recreated as a relic for the world to once again enjoy.

SPU 90th Anniversary was reviewed in Stereophile April 2009 and the verdict has been: the SPU 90th Anniversary is easily, clearly among the best—not to mention an exceptionally good value. A winner!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The Ortofon exchange service for the SPU Collector Box

For the SPU Collector Box with these 400 special products we now offer a repair service for the issues not covered by warranty. If you should have need for this service, please contact your local Ortofon Partner or Ortofon Headquarters.

Maintenance

Please remember to remove dust from the diamond tip before and after playback of each record with the aid of a suitable small brush, which should be guided gently along the cantilever in the direction of the diamond tip.

In order to keep electrical contacts clean and to lubricate the knurled nut on the tonearm, Ortofon recommends occasionally a light spray of contact cleaner like DeoxIT ®Gold G-Series into the tonearm socket.

Technical data

SPU Classic GM

Output voltage at 1000 Hz, 5 cm/sec	200 mV
Channel balance at 1 kHz	< 1 dB
Channel separation at 1 kHz	> 20 dB
Channel separation at 15 kHz	> 10 dB
Frequency range at -3 dB	20-25,000 Hz
Frequency response	20-20,000 Hz ±3 dB
Tracking ability at 315 Hz at recommended tracking force	>65 µm
Compliance, dynamic, lateral	8 µm/mN
Stylus type	Nude spherical
Stylus tip radius	R 18 µm
Tracking force range	3.0-5.0 g (30-50 mN)
Tracking force recommended	4.0 g (40 mN)
Tracking angle	20°
Internal impedance, DC resistance	2 Ohm
Recommended load impedance	>10 Ohm
Cartridge body material	Aluminum-Magnesium alloy
Cartridge colour	Nickel/Black
Cartridge weight	32 g

SPU Gold Reference

Output voltage at 1000 Hz, 5 cm/sec	> 0,2 mV
Channel balance at 1 kHz	< 1 dB
Channel separation at 1 kHz	> 25 dB
Channel separation at 15 kHz	> 15 dB
Frequency range at -3 dB	20-50,000 Hz
Frequency response	20-20,000 Hz +2.5 dB/-0 dB
Tracking ability at 315 Hz, lateral	>70 µm
Compliance dynamic lateral	10/10 µm/mN
Stylus type	Ortofon Replicant 100
Stylus tip radius	r/R 5/100 µm
Tracking force range	2.5-3.5 g (25-35 mN)
Tracking force recommended	3.0 g (30 mN)
Tracking angel (vertical)	20°
Internal impedance DC resistance per channel	3 Ohm
Recommended Load impedance	>10 Ohm
Cartridge body material	Aluminum-Magnesium alloy
Cartridge colour (body/shield)	Gold/Black
Cartridge weight complete with head shell	32 g

SPU 85

Output voltage at 1000 Hz, 5 cm/sec	400 mV
Channel balance at 1 kHz	< 1,5 dB
Channel separation at 1 kHz	>23 dB
Channel separation at 15 kHz	>18 dB
Frequency range at -3 dB	20-30,000 Hz
Frequency response	20-20,000 Hz +2/-1 dB
Tracking ability at 315 Hz at recommended tracking force	80 µm
Compliance, dynamic, lateral	8 µm/mN
Stylus type	Nude elliptical
Stylus tip radius	r/R 8/18 µm
Tracking force range	3.0-4.0 g (30-40 mN)
Tracking force recommended	3.5 g (35 mN)
Tracking angle	20°
Internal impedance DC resistance	3.5 Ohm
Recommended load impedance	50-100 Ohm
Cartridge body material	Hida Beech wood + Urushi
Cartridge colour	Dark maroon
Cartridge weight	30 g

SPU 90th Anniversary

Output voltage at 1000 Hz 5 cm/sec.	300 mV
Channel balance at 1 kHz	< 1 dB
Channel separation at 1 kHz	> 23 dB
Channel separation at 15 kHz	> 15 dB
Frequency range at -3 dB	20-30,000 Hz
Frequency response	20-20,000 Hz ± 2 dB
Tracking ability at 315Hz at recommended tracking force *)	80 µm
Compliance, dynamic, lateral	10 µm/mN
Stylus type	Nude elliptical
Stylus tip radius	r/R 8/18 µm
Tracking force range	2.5-3.5 g (25-35 mN)
Tracking force, recommended	3.0 g (30 mN)
Tracking angle	20°
Internal impedance, DC resistance	2 Ohm
Recommended load impedance	10-50 Ohm
Cartridge body material	Wood powder + Phenolic resin
Coilwire material	Silverplated Copper
Cartridge colour	Shiny Black
Cartridge weight	30 g

*) Typical value


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