

Revised and  
Expanded Second Edition

Joachim Bung

# Swiss Precision



The Story of the Thorens TD 124  
and Other Classic Turntables

**Cover page photo:**  
The Thorens TD 124 turntable equipped with an Ortofon 309 tonearm against the wintery backdrop of Sainte-Croix. The turntable’s arrangement in the picture demonstrates the duality of the platter that includes a flywheel and upper platter.

**English Translation:**  
Elizabeth Doerr, Karlsruhe

**Project Consultancy:**  
Ken Kessler, Canterbury

**Photography:**  
Armour Home Electronics, Balcon du Jura Vaudois Tourisme, Lucy Bastin, Michael Bechtold, Braun GmbH, Rudolf A. Bruil, Art Dudley, Elac Electroacoustic GmbH, EMT Studioteknik GmbH, EVI Audio GmbH, Simone Fuchs, Bernie Gail, Adi Häfliger, Klaus Hassler, Mario Hendrichs, Andreas Herz, Lothar Hoffmann, Gert Jakobsen, Matthias Kling, Lothar Kolb, Frede Kristensen, Martin Kunz, Abe Masakazu, Norma Hylee Tech, Stefano Pasini, Jean-Claude Piguët, Gerd Pinsker, Max Ramali, Thomas Reinsch, Sebastian Schiele, Jürg Schopper, Shure Incorporated, Peter Sisask, Ian Smith, Jochen Straceny, Ilona Surrey, Thomas Tasch, Barry Taylor, Technical & General, Roger Turin, vogel & schmerz – freie presse, Gerhard Weichler, Foto-Studio Rolf-Dieter Winter, Peter Zenker

Images from 1962-1967 issues of the magazine *HiFi-Stereophonie* reproduced with the express consent of Motor Presse Stuttgart  
Images from issue 8/1960, 9/1960 (page 221) and 8/1963 (page 101) of the magazine *fono forum* reproduced with the express consent of Reiner H. Nitschke Verlags-GmbH, Euskirchen (www.fonoforum.de)  
The registered Thorens logo reproduced with the express consent of Heinz Rohrer, Thorens Export Company, Giebenach/Switzerland

The author would like to thank the following parties, without whose help this second edition of *Swiss Precision* would not have been possible:  
Franz Josef Boßmeyer, Dennis Burke, Dominique Donnet-Thorens, Reg Edey, Armin Graf, Remo Habermacher, Lutz-Ronald Herzberg, Dr. Frank Hirsch, Horst Kaupp, Roman Kern, Eng Bo Kho, Karlheinz Kratz, Rudolf Laeng, Gerhard Lernet, Jaap Pees, Jochen Räke, John Rudman, Thomas Spengler, Oliver Stephanus, Dorothee Thomanek, Holger Trass, Rolf Ullmann, Dr. Friedrich Wächtershäuser, Gerhard Weichler, Jürgen Weisser, Michael-Otto Wiehle, Per Windfeld

**Layout:**  
Visuelle Kommunikation Udo Beykirch, Worms

**Printing:**  
Nino-Druck, Neustadt an der Weinstraße  
Printed on the Heidelberg Speedmaster CD 102  
ISBN 978-3-00-021162-1

**Distribution:**  
Verlags-Service Angelika Bung  
Stichelwiese 2 b, 61389 Schmitten, Germany  
Telephone: +49 (0) 6084-3764  
E-mail: info@redaktionsbuero-bung.de  
www.redaktionsbuero-bung.de

All rights reserved. Reprint, storage, or distribution – even excerpts – only admissible with the prior written consent of the author and under referencing of the source.  
Copyright © by Joachim Bung, Stichelwiese 2 b, 61389 Schmitten, Germany

Contents

	Preface	8
	How I Got to Know the Large Thorens Turntable of the 1960s	9
	The Hi-Fi Turntables by Thorens in Sainte-Croix	
	1957-1967: The Era of the Belt and Idler Wheel Turntables	13
	Production Begins with Music Boxes · Down New Paths · Target Groups: Radio Stations and Recording Studios · “The Rolls-Royce Among Turntables” · Precision Workmanship and Exacting Examinations · Integrated Tonearm Board Advantage · Free Choice of Tonearm · Separate Tonearms from the U.S. · Cueing Control Convenience · Intelligent Drive Concept · Four-Speed Right from the Beginning · The Convenience of an Illuminated Stroboscope · Clever Speed Regulation · A Good Start in Europe and the U.S. · Supplemental Amplifiers and Loudspeakers · A Family is Born: TD 184 and TD 134 · Thorens Tonearm BL 104 · BTD-12 S – Forebear of the EMT Tonearm · Thorens TD 135: Inexpensive Studio Machine for Amateurs · Special Version by Telefunken · Thorens TD 121 – the “Economical” Version of the TD 124 · Models for the U.S. Market · Joining Paillard · Thorens in Germany: Paillard-Bolex · Twilight: The Short Era of the Thorens TD 124/II · Color Change from Cream to Grey · Light Tonearm TP 14 with Anti-Skating · Tonearm Variety on the TD 124/II · Special Flywheel for Electrodynamic Cartridges · Record Brush Play · Thorens TD 124/II and TD 135 in Home Studio Systems · “One Big Workshop” · Turntable with a Completely Different Drive Principle · Paillard Searches out Partner · EMT Tonearm Modeled on the TP 25 · Licensing in Germany · End of Production in Sainte-Croix	
	An Encounter with Robert Thorens – Head Engineer of the Sainte-Croix Factory	77
	Jacques Basset’s Impressions of Sainte-Croix and Differing Company Cultures	84
	All Paths Lead Through Wettingen – The Story of Thorens-Franz AG	89
	The Thorens TD 124 Mirrored in International Hi-Fi Magazines	95
	Gerhard Weichler and the Prototype Thorens TD 124 Tangential	104
	Turntables TD 124, TD 134, and TD 184 on International Examination Tables	105
	Johann Gurinov – Expert in the Thorens TD 224 Masterpiece	107
	Beogram 3000 – the Short Career of the Thorens TD 124/II at Bang & Olufsen	112
	Technical Data of Precision Turntable TD 124 and Turntables TD 134 and TD 184	114
	Competitors of the Thorens TD 124	
	Lenco Turntables: Competition from Thorens’s own Country	119
	Lenco and Thorens Turntables as Beasts of Burden for Disc Jockeys	138
	Garrard 301 and 401 – Thorens TD 124’s Foreign Rivals	142
	Arnold Sugden and His Remarkable Connoisseur Turntables	154
	Jobo 2600, Acoustical 2800, and 3100: Turntables from the Land of Windmills	160
	Turntables by Rek-O-Kut and Empire: Practically Unknown in Europe	168





Tonearms, Cartridges, and Record Accessories from the 1960s

Danish Classics: Tonearms and Cartridges by Ortofon	173
SME Tonearms : Elegance and Technical Perfection	189
The Stereo Dynetic, Professional Tonearms, and Cartridges by Shure	198
Record Accessories for the Most Discriminating Audiophile	212



High Fidelity’s First Steps in Germany

Hi-Fi Salesman Rolf Ullmann Remembers the Beginnings of High Fidelity	219
Automatic Hi-Fi Turntables by Elac, Perpetuum-Ebner, and Dual	246
First the Idler Wheel then the Belt: Hi-Fi Turntables by Braun	250



The Rediscovery of the Thorens TD 124

Dream Turntable for Vinyl-Oriented Audiophiles	255
Tips for Purchasing a Used Thorens TD 124 or TD 124/II	260
<i>Holger Trass</i> : The Thorens Classics from Sainte-Croix on the Internet	268
<i>Ken Kessler</i> : Thorens in the United Kingdom	270
Jürg Schopper’s New Components Put Every TD 124 in Top Form	273
Suggestions for Putting an Historic Thorens TD 124 Back into Operation	278
Thorens TD 124 Component List	282
What Proud and Happy Owners Say about their Thorens TD 124	284
Contact Information for Dealers and Thorens Specialists	285
Thorens TD 124 Cover Showcase	286



Inner courtyard of the renovated Thorens factory

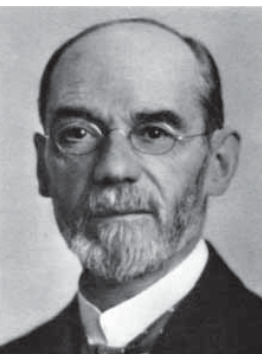


Presentation of the German edition of *Swiss Precision* on October 31, 2005 in Sainte-Croix

Upper row from left: Simone Fuchs (daughter of TD 124 designer Louis Thévenaz), Luc Martin (mayor of Sainte-Croix), Angelika and Joachim Bung, Michel Ruchat (head of the tourist bureau)  
Lower row: Robert Thorens with his wife, Bekka, and son, Dr. Blaise Thorens

Photo: Journal de Sainte-Croix





Company founder  
Hermann Thorens

## Production Begins with Music Boxes

The landscape, people, and economic development of the Jura displays a certain similarity to that of the Black Forest. Hermann Thorens (1856-1943) first founded his company as a factory for music boxes in 1883. Shortly after the turn of the century, the phonographic industry was introduced to Sainte-Croix as a logical supplement to traditional music box manufacture. Cylindrical phonographs were manufactured at first, then modern horn gramophones. Electrically-driven motors were added after 1928, and a little later the first electromagnetic cartridges and tonearms came along, some even fitted with tangential guidance.

Radio receivers, professional record cutting machines and cartridges, and even harmonicas, cigarette lighters, and razors with spring motors all belonged to the program at one time or another. Even in this respect there were parallels to the Black Forest: electric razors were something that turntable manufacturer Dual also produced for a time. Like at the St. Georgen company headquarters, the factory in Sainte-Croix exercised its special expertise in precision engineering on all of its products.

Thorens celebrated its 75th anniversary in 1958. In the main factory on Avenue des Alpes, which employed around 800 people and a number of cottage industry workers in their homes, about 50 million music boxes, five million cigarette lighters, and three million gramophones had been manufactured to that point. In honor of the anniversary, the company management released an artistic commemorative publication that included a genealogical table of the factory's owners and photographs of production buildings and products.



TD 124 designer  
Louis Thévenaz

The Thorens factory in Sainte-Croix; at front and to the left is Hermann Thorens's house



## Down New Paths

The trend toward the highest possible sound quality in record reproduction, better known as high fidelity, was something that Thorens recognized very early on. Since the Swiss market was limited, and the company needed to sell about half of its products in other world markets, the production of first-class machines was the company's primary goal. When Robert Thorens received his first long-play records from the U.S., it became clear to him that not only machines were needed to play the additional speed of  $33\frac{1}{3}$  rpm, but that it would be necessary to design completely new turntables for them. The wow and flutter of previous models, with deviations in speed of more than 1.5%, did not meet the requirements for these new, slowly revolving vinyl records.

It was Louis Thévenaz, head of development at the Thorens Sainte-Croix factory, who finalized the idea for a turntable with incomparable elements. He experimented with parts for a prototype at the same time that his countryman Willi Studer was working on a groundbreaking invention: the Revox 36 Series reel-to-reel tape machine. The new deck was made to offer both demanding music fans and professional experts benefits combined in one machine for the first time.



Building the prototype with the serial number 1001, Thévenaz was forced to use parts from predecessor model CBA 83 – a requirement stipulated by the thrifty Thorens family. Thus, the designer utilized the ivory-colored plastic tonearm and the 15-watt motor as there were still plenty of the latter in the factory. When the prototype was finished, it was fitted with lavish details such as a combined belt and idler wheel drive, an interchangeable board for mounting any desired tonearm, an illuminated stroboscope for checking speed, and a heavy single-piece platter without clutch.



Speed selector  
of the prototype



Top: TD 124 prototype  
still without  
coupling device  
Bottom: predecessor  
model CBA 83



Right: one-piece  
platter with strobe  
markings





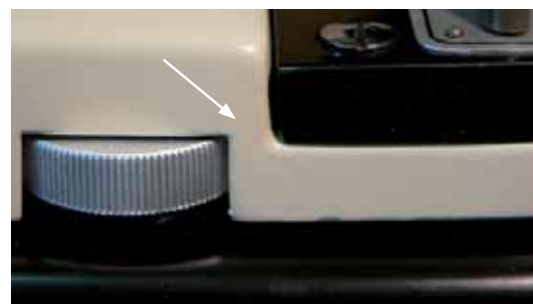
Finished prototype of the TD 124

The knobs for speed selection and turning the motor on and off were positioned to the left and right, as on the English Garrard 301, though in reverse order. The speed selector and space for the operating elements, the motor pulley, and the step pulley did not yet have the shape they would later take.

In order to test the trade's reaction in the motherland of high fidelity, Robert Thorens went to his New York importer, Elpa Marketing Industries, with the prototype. The American experts were excited, but warned Thorens that this turntable must be made into something special. Thus, the engineers in Sainte-Croix continued to work on their turntable, combining the speed selector with the on/off switch and developing a two-part platter with a clutch as a semiprofessional element.

The flywheel of this pre-series machine was still made of brass, something that turned out to be too expensive for serial production. The chassis did not yet have the circular cutaway typical of later models, and the tonearm board wasn't attached in a slanted manner, but rather at a right angle. When the model was ready for the market in 1957, the factory gave it the name TD 124 (TD = *tourne-disque*, "turntable" in French).

From top to bottom: TD 124, serial number 1003 with a brass flywheel, no circular cutaway in the chassis, and a straight-edged tonearm board



## Target Groups: Radio Stations and Recording Studios

German radio station turntable EMT 927 by Elektromesstechnik Wilhelm Franz in Lahr had established itself in public European FM radio stations since 1952. This 41-kilogram machine had proven itself exceptionally robust and reliable. With a platter measuring 44 cm in diameter, the spectacular, non-compromising 927 was capable of playing every record up to a diameter of 16 inches in the best possible quality. Equipped with a correspondingly long Ortofon tonearm and cartridge, however, it cost the stately sum of 3,500 marks in Germany.

The model shown here is the predecessor to the EMT 927, Type R 80, of which no more than 50 pieces were manufactured. The machine bearing serial number 34 served its time at Frankfurt's Hessischer Rundfunk (Hessian broadcasting). When the studios there discontinued using the R 80, its present owner was given the broadcast-quality turntable. In the 1970s, this R 80 was modernized with the addition of EMT tonearm 997, wired for stereo reproduction.

The first long-play records with micro grooves, which came to the market at the beginning of the 1950s, had – like shellac records – a diameter of ten inches.



Illuminated stroboscope and display for tonearm position

EMT radio station turntable R 80 with a 44 cm diameter platter





Narrow and extended versions of the armboard

### Integrated Tonearm Board Advantage

Right from the beginning, the Thorens TD 124 competed with the Garrard 301 (→p. 142), which had already been available since 1953. The Thorens with its cast platter and strongly ribbed chassis was heavier and somewhat larger than its British competitor. Garrard described its flagship model as a so-called transcription motor, which meant that the turntable and the tonearm were fully separated from one another. The Swiss manufacturer, however, fitted the 124's chassis with a wooden board on its right side that was joined to the frame crafted in cast aluminum underneath it via three screws. Popular nine-inch tonearms could be installed and later quickly removed from the board, which was made of untreated wood or oiled walnut and later painted black. A correspondingly wider board was available for 12-inch arms (sometimes also called 16-inch arms). Thus, the turntable and the arm formed a stable, vibration-free unit devoid of movement in relation to one other.



Armboard joined to a frame underneath

The integrated tonearm board of the TD 124, patented in Switzerland, had a decisive advantage over the Garrard, especially since at that time hardly anyone recognized the necessity of stable, solid bases for heavy turntables. Many 301s were housed in light cases with unfavorable resonance or – even worse – were kept spring-loaded on a board while the tonearm was installed on it. Both variations had correspondingly negative effects on the sound. Thorens “hardly had clearer concepts” in this area according to the opinion of Italian Thorens connoisseur Stefano Pasini. The operation manual of the TD 124 also recommended putting the turntable on special springs (components CB 1172 and CB 962) if there was a higher chance of acoustic feedback. “Today, one can only grin at such recommendations,” the expert admits. “But that was the state of technology at the end of the 1950s.”

### Free Choice of Tonearm

The Thorens TD 124 was first offered purely as a chassis in the mono era, with the choice of tonearm, cartridge, and base left to the purchaser. The idea was that audiophiles buying a turntable for about 400 Swiss francs would not like a pre-chosen solution to the rest. “During the 1950s, the job of turning a record at its nominal speed was not intimately connected with the concept of building something that would correctly place a stylus on its grooves,” said Pasini, defining turntable function in his book *Deutsche Perfektion* (German Perfection). According to Pasini, Thorens and Garrard built excellent turntables, but the first tonearms from these factories (BL 104 and TPA/12) looked more like “half-baked attempts.”

The quickly exchangeable tonearm board of the Thorens TD 124 invited its owner to put together a selection from the large amount of products available, pre-installing the arms on additionally purchased boards and using them with the turntable as they wished. “The assembly of arms, even those for 16-inch records, was very easy,” the above-mentioned brochure underscored. Additionally, traces of previous arm installations could be avoided by using separate boards. Because of this tonearm flexibility, Thorens did not yet see the necessity of making their own arm in 1957, one to match the quality of the turntable.

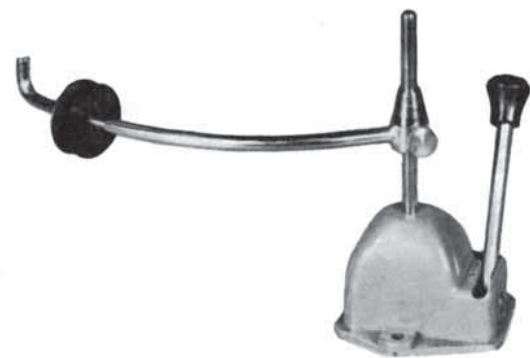


Often used with the TD 124: an Ortofon tonearm of the 212 series



A TD 124 with a 16-inch record and a Shure M 236 tonearm





The Dextrafix Microlift with movable rubber disk on the arm rest

for a mechanism that can be installed after the fact and that sets the tonearm down by turning a button or pushing a lever – either with immediate action or hydraulically damped. “A little mechanism was created in that could be installed after the fact. The Dextrafix Microlift works reliably, is easy to operate, and even looks good.”

The Dextrafix, which was distributed in Germany by Telefunken, was secured right next to the tonearm’s pivot on the board by two screws. Its arm rest height could be adjusted to suit the deck. With this device the arm could be pushed over the record as desired, and it was lowered by simply pushing the lever. The disk that could be set as desired on the arm rest was very helpful. According to the record size used, the disk could be set so that when the tonearm was pushed all the way to the right, the stylus hovered directly over the outside groove. The disk was made of soft rubber and remained in place by means of friction so that the setting could be changed as often and effortlessly as desired.

A rare sight today is the tonearm board for the Thorens TD 124 made by the Swedish firm SELA that included an integrated lift and arm rest and fit Ortofon arms. SELA was a manufacturer of professional studio equipment and within this context the importer for the TD 124 in Scandinavia. The SELA board was extremely stable, made as it was of the same cast aluminum as the TD 124’s chassis. It united the arm and cartridge more strongly with the deck, ensuring an especially dynamic sound. Colton Audio Products in England (→p. 212) was a manufacturer of separate cueing controls, making the Precise Lift (undamped) and the



The Dextrafix Microlift on the Thorens TD 124



A Hi-Jack Mk III / Mk IV leaflet

Varilift (damped) models. Decca really discovered the key when it presented its motor-driven tonearm lift, which could conveniently be controlled from the couch with a remote control. “The Deccalift is delivered with a rocking switch with gold contacts,” the company described its original product. “All that you still need is a three-wire cable in the length of your choice and a six-volt alternating current for the motor. Many tube amplifiers have a 6.3 volt output that is suitable for this.” From 1963, Ortofon also had a separate lift in its program called the Hi-Jack (→p. 184). It could be used for both its own and other tonearms.

### Intelligent Drive Concept

The Thorens TD 124 was an idler wheel turntable that included one clever detail its English rival did not have. While the Garrard had a platter whose inner rim was driven directly by the idler wheel, the Thorens was equipped with a more lavish belt and idler wheel drive.



### THE DECCALIFT FOR ARMCHAIR CONTROL OF THE ORCHESTRA



It combined the advantage of the belt, which ensured motor vibrations stayed away from the platter, with the idler wheel, which joined the motor to the platter securely. Thus, the TD 124 was a harbinger of things to come. Another of its drive principle elements and that of its successors was the use of wheels featuring large diameters and slower speeds.



Ortofon RF 309 tonearm with extended armboard by SELA and integrated lift







Left: a prototype of the Thorens TD 150 with TP 14 tonearm  
Bottom: Revox G36 open-reel tape recorder

The Thorens TD 150 was presented in a Swiss brochure along with the TD 124/II, TD 134, TD 135, and TD 224 in this version. According to a price list published in 1965, the model complete with base and ceramic cartridge by Sonotone cost 365 Swiss francs. The version that included a magnet cartridge by Pickering was priced in the middle range (435 Swiss francs). 574 Swiss francs was the asking price for the top model including an Ortofon SPU/TE.

#### Paillard Searches out Partner

By 1966, the managers of the Paillard group had completely lost interest in the Thorens turntables. They wanted to concentrate on their camera and projector businesses – naturally without knowing that the end of the cine film era would soon be arriving. The managers in Sainte-Croix thus received the task of searching out another strategic partner for the company. The production was supposed to remain in Switzerland as far as was possible. For this reason, Robert and Rémy Thorens made inquiries at Studer-Revox in Regensburg. Willi Studer, however, wanted to remain within his main area of know-how: recording machines. Additionally, he was entirely occupied with the building of his new factory in the Black Forest's Löffingen, which was to alleviate the delivery bottle neck of the Revox G36 model. He suggested they contact Wilhelm Franz.



Franz was the owner and creative head of EMT Elektromesstechnik, a German company whose radio station turntables enjoyed a global reputation. The company was founded in 1938 in Berlin and seven years later it moved to Lahr. In 1956, the company's managing director integrated the production into the newly built EMT factory in Lahr under the leadership of his brother, Walter Franz. The EMT Wilhelm Franz GmbH subsidiary was founded in Wettingen, a town near Zurich, in 1959. This distribution company was created to increase the export of the radio station turntables, studio systems, and measuring devices whose development Franz heavily contributed to and which were highly respected in Switzerland. Another of its tasks was the worldwide distribution of studio recording machines made by Swiss manufacturers Studer and Stellavox.

Tape head covering of a Revox G36 made in Switzerland



1966

Right: an EMT advert in the magazine *Funkschau*, 1966

**Ein weltbekannter Begriff in der professionellen Studioteknik**

<b>NF-Polungsprüfer</b> EMT 160 	<b>„NoisEx“-Compander-Verfahren</b> EMT 137 A 	<b>Studio-Magnettongeräte</b> A 62 	<b>NF-Millivoltmeter</b> EMT 125 
<b>Studio-Plattenspieler</b> EMT 930 	<b>Tonschwankungsmesser</b> EMT 420 	<b>Regieeinrichtungen</b> RE 85 	<b>Nachhallplatte</b> EMT 140 
<b>HF-dichte Modulationsleitungen</b> 	<b>Video-Schneideeinrichtung</b> Vid-E-dit 	<b>ELEKTROMESSTECHNIK</b> <b>WILHELM FRANZ KG</b> 763 LAHR/POSTFACH 327 Export: EMT WILHELM FRANZ GmbH WETTINGEN/AG SCHWEIZ Seminarstraße	





*Look underneath*  
**THORENS**  
*and you will see...*

a brilliantly integrated mechanism that moves flawlessly, silently . . . the ever-dependable heart of your record playing system. Every integral part no matter how small, is individually hand machined, and polished to microscopic tolerances for maximum operating efficiency and enduring stability. No machine stamped or cast mechanism could begin to approach the top quality standard of THORENS turntables . . . outstanding examples of world-renowned Swiss precision engineering and fine craftsmanship. Here is performance at its best for your high fidelity pleasure.

All THORENS turntables feature superior, identical idler wheel and belt drive systems, variable speed controls . . . Non-magnetic weighted tables and self lubricating bearings. All THORENS units illustrated here from the world famous TD-124 to the TDK-101 incorporate the quality performing features of this craftsmanship.

Before you buy, *compare* the underside of THORENS turntables with any other unit. You'll accept nothing less than a THORENS — *you can afford the finest!*

## "People Loved to Work Here"

An Encounter with Robert Thorens –  
Head Engineer of the Sainte-Croix Factory

Sainte-Croix – the place where all Thorens turntables were manufactured until 1966 – is located almost dead center of the triangle formed by the historically important Swiss cities Lausanne and Neuchâtel, and Besançon on the French side. The attraction of the 4,600 man-strong tourist community today is the grandiose view of the Alps from the Balcon du Jura Vaudois. When the weather is good, the view can stretch across to the 4,000 meter ice caps of the western Alps. To the east, the 250-kilometer long Alpine panorama reaches to the Pilatus of Lake Vierwaldstätter.

One thing was clear to me when preparing this book: a visit to Sainte-Croix to research what happened to the former factory, perhaps even including interviews with contemporary witnesses, would be the crowning jewel of my representation of Thorens's Swiss history. This was easier said than done, and a whole lot of luck was involved in reaching this goal.

Stroke of luck number one: Olga Kelch, the charming wife of turntable developer Rolf Kelch from Lahr. It was she who had the decisive telephone number in her book. As an audiophile and owner of a Thorens TD 124, I naturally already knew of the existence of an expert for the legendary idler wheel turntable in Switzerland. He was said to be an exceptionally experienced man who perfectly masters this turntable, relying upon "a whole living room full" of original replacement parts for restorations. The address of this mysterious man had yet to be revealed to me, however. Thanks to Olga Kelch this man became my stroke of luck number two. His name: Bernhard Streit.

### Contact with Swiss Thorens Specialist

I was able to win Streit over on the telephone. He told me of the years he had spent with a reputable hi-fi dealer in Zurich's as workshop head and, yes, that he restores Thorens TD 124s. I also told him of my experiences with our favorite turntable. I was able to convince him of the earnestness of my research and my concept of a publication despite the many rumors floating around regarding the topic. The ponderous Swiss, who weighs each of his words before uttering them, even agreed to read the first draft.



Ste-Croix against the  
backdrop of the Alps

Weeks and months passed before my stroke of luck number three occurred: a personal meeting with the head engineer of the former Thorens factory. My Swiss source had let me know that Robert Thorens lives in Sainte-Croix. His health was apparently not the best, and he rarely left the fold of his family and numerous grandchildren. Streit did however leave me some hope by intimating that a talk with Thorens might be possible if he were to be there as well.



# “Thorens’s Free Spirit Couldn’t Unfold with Paillard”

Jacques Basset’s Impressions of Sainte-Croix and Differing Company Cultures

Traveling back in time to the 1960s is what Jürg Schopper and Jacques Basset did together just two years after I met Robert Thorens. Basset, 73 years old, is one of the last remaining employees of Thorens in Switzerland. Schopper, about half his age and well-known in TD 124 circles for his renovation expertise regarding the popular turntables, has been friends with Basset for years. The hi-fi dealer from Winterthur interviewed Basset on the subject of his time at Thorens SA at his home located between Lake Geneva and Lake Neuchâtel in April 2007.



Jacques Basset and his two Thorens TD 124 models

“The topic is very complex and to this day moves Jacques Basset deeply,” Schopper began his report on the interview. “If you are not from Switzerland, you would not easily understand what it meant to be an employee of this great company, part of it. The Thorens workforce felt like a family. And a world fell apart for this family when the factory was closed in 1966 – despite new career perspectives with Paillard.”

Schopper’s interview partner entered Thorens’s Crissier development department in June 1960 as a technician and engineer. The modern laboratory had been established a year before by the company in order to offer more attractive work space. “Back then, there were not enough qualified employees in Switzerland,”

Basset explains. “The factory in Sainte-Croix was pretty far out of the way and not many employees were prepared to drive out into the mountains every day. At that time hardly anyone owned a car! Crissier, however, was located near Lausanne, near the schools, and could be easily reached using public transportation.”

Basset and his new laboratory colleagues were introduced to this turntable production by their boss, Amédée Nicole. “I found the visit to Sainte-Croix sobering,” he remembers. “Compared to my workspace in Crissier, I had the impression it was a pretty antiquated mechanical production workshop.” He found the Thorens TD 124’s lavish manufacturing process a

positive aspect, though. “Above all, it was the many test phases that impressed me. There was just not enough space, however. The rumble test was done on some finished turntables on the stairs to the basement since the entire factory was so loud and even vibrated in places.”

Basset reports that there were already rumors circulating before the radical fusion of Thorens and Paillard in the fall of 1962, but this didn’t change the fact that the workforce was confronted with it from one minute to the next. He reports that Paillard immediately discontinued production in areas that were not profitable and even let people go. The music box production was integrated into the new company Melodies SA in L’Auberson, one of Sainte-Croix’s neighboring villages.

“Thorens and Paillard’s company cultures were very different,” Basset confirms, adding that the new managers’ style had a fairly military character to it. Many



Jürg Schopper in his interview with Jacques Basset

good and marketable developments were refused under Paillard, the reason being, “Gentlemen, these are products the world doesn’t need.” This sort of thing led to a new attitude toward the staff’s employer. “The development department had a very large influence on the production at Thorens. Much of it was realized, too. At Paillard, on the other hand, Thorens’s free spirit couldn’t unfold.”

Paillard honestly tried to continue developing Thorens, and even replaced personnel at a management level to reach this goal. “The head of development, Louis



Prototype of an open-reel machine by Thorens





EMT turntables in use at a radio station

## Introduction of the Thorens TD 125

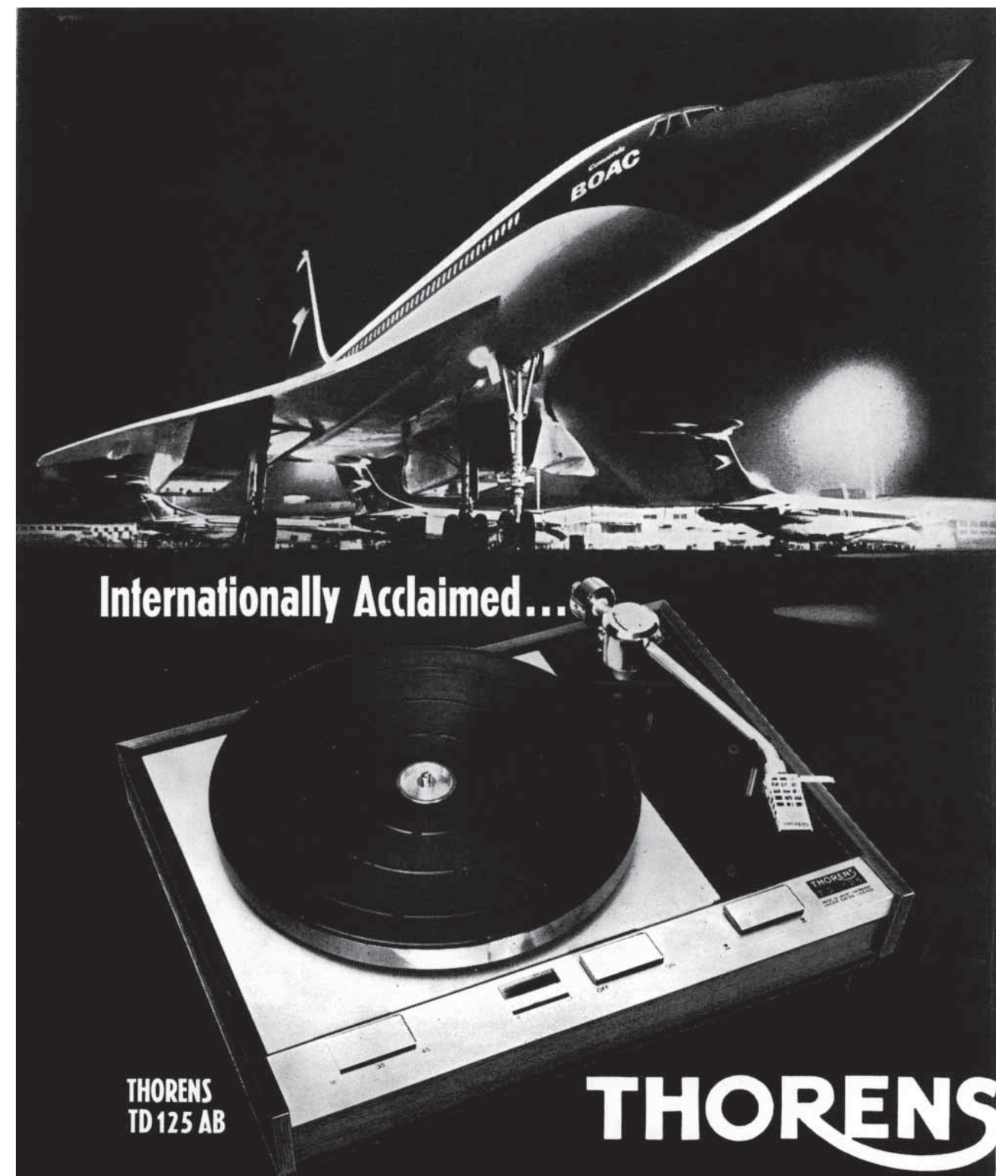
Thorens-Franz AG showed the new top model developed in the Lahr factory, TD 125, for the first time at the large international trade fairs that took place in 1968 in Switzerland, Germany, England, and the USA. "With this studio turntable, Thorens heads down an unconventional path, getting closer to solving the old problem of perfect record reproduction," the company wrote in a press release for the "hifi '68" fair in Düsseldorf. "Reliable construction principles and decades of experience in manufacturing precision machines united with intense market research aided in creating the TD 125. The most modern electronics and semiconductor technology formed the starting base for the realization of this new top model."

Like the world-renowned studio deck TD 124/II, the new TD 125 turntable was fitted with a separate tonearm board for use with all high-quality tonearms. A new Thorens tonearm, TP 25, especially suited for the TD 125, was in testing. The Thorens TD 125 was cut out for playing  $16\frac{2}{3}$ ,  $33\frac{1}{3}$ , and 45 rpm records. Noiselessness and speed consistency reached the border of that which is physically possible. By using modern transistor electronics, all mechanical gear components could be omitted, guaranteeing an extremely high degree of noiselessness.

Thorens underscored the fact that the TD 125 could also be fitted with tonearms of every length. "For extra-long arms such as the SME 3012 and the Ortofon RMG 309, a bigger mounting platform ready for installation

is available. A longer front covering is obtainable for it, which is necessary for smooth transition within the console." Correspondingly, an extended base for using 12-inch tonearms was also available for the new top model. Its Plexiglas lid was, however, a step back in comfort: because of its higher weight, the elegant hinge mechanics of the PH/UKo on the Thorens 124/II that allowed the lid to stay up could not be used. Instead, the lid of the long TD 125 is held in the "up" position with a Plexiglas stand whose tongue caught a slit in the console when the lid was open.

Far more elegant, but also more expensive, was the walnut tree console, the SME 2000, featuring a Plexiglas lid that the English manufacturer delivered with its tonearms 3009 and 3012 for the Thorens TD 125 as well as for the Garrard 401, the Goldring G99, the Sony TTS 3000, and other high-class turntables. In Switzerland, this console, sought-after in perfect condition to this day, cost almost 500 Swiss francs.



## Effusive Test Reports in Hi-Fi Magazines

When the Thorens TD 125 was introduced to the international expert press, it at once garnered numerous positive critiques. Representing many others, the opinion of U.S. magazine *Audio* wrote the following in February 1970: "The serious high fidelity enthusiast

is continually looking for the best piece of equipment in every category – the best tuner, the best amplifier, the best tape recorder, the best cartridge, the best turntable, and a speaker system he likes. And aside from an ultra-expensive broadcast-type table, it appears that the features of the Thorens TD 125 place it as a favorite contender in the best turntable category.





This obligation to quality practically guaranteed the turntables from Burgdorf a quick reputation for perfection. Both of the Laengs' sons meanwhile also worked in the company. Fritz Laeng Jr. was export manager and head of personnel, while engineer Rudolf was in charge of research and development. In 1959 Lenco's production, which at first took place on the Laengs' property and later in smaller manufacturing firms, was moved to a newly built factory in the neighboring town of Oberburg. From this time on, the company was able to offer its turntables in two different basic versions: A flagship model featuring a heavy anti-magnetic platter weighing in at 3.7 kilograms and a lighter version of it. The latter was characterized by the same generous dimensions, but had a simpler main bearing and a 30-centimeter platter crafted in pressed steel. The former, typified by its heavy platter, was the idler-wheel turntable Lenco L 60.

Both versions had something in common; something that was practically Lenco's signature element: Continuously variable record speed in the 15 to 18 rpm and 30 to 80 rpm ranges. This was made possible by the stepless conical drive pulley of the four-pole motor, upon which the idler wheel moved. Through a cutaway in the chassis, this wheel directly drove the underside of the platter. The rpm selector clicked in at the normal record speeds,  $16\frac{2}{3}$ ,  $33\frac{1}{3}$ , 45, and 78 rpm. For more active musicians, the pitch of his or her instrument could be adapted to the music from the record using the continuously variable speed adjustment. Dance schools, which often play their records at varying speeds, also applauded this unique element.

An infinitely variable rpm speed selector typical of Lenco



Turntable workshop on the Laeng Friedegg property

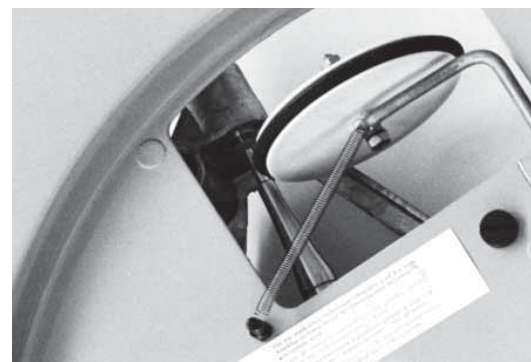


First Lenco factory in Hasle, Switzerland



Ex Libris radio and record store of the Laeng family

Sliding idler wheel on the conical motor shaft



Lenco's headquarters in Oberburg

## Lenco L 70: Welcome to Hi-Fi

Lenco was successful in entering the hi-fi market in 1960: Production head Bruno Grütter's newly developed model L 70 bore the inscription "stereo-mono turntable" on its name plate. This model was equipped with a flexibly suspended, quiet four-pole asynchronous motor and a dynamically balanced platter 306 millimeters in diameter. According to the manufacturer, wow and flutter lay under 0.11 percent. The stylus pressure of the tonearm fitted with four precision ball bearings could be altered by a weight coming through from the other side. It was moved using an easily gripped adjustment screw, while a scale from 1 to 15 grams displayed its current positioning. The closed head shell was available in a choice of white plastic or metal. The Lenco L 70's tonearm was also sold separately to track newfangled stereo records.

For audiophiles who found it troublesome to put the arm down on the record, the L 70 possessed an automatic lowering device operated from the on switch. A plastic knob under the tonearm rested upon a cueing mechanism that was adjustable in height. Now, without losing any support, it could be pushed with the hand so that the stylus hovered over the desired groove on the record. By pivoting the lowering lever, the tonearm slowly descended onto the record.

Swiss compact system Audio 100 with the Lenco L 70



Tonearm of the Lenco L 70 – also available separately



high fidelity
ELEKTRONIK
high fidelity
ELEKTROAKUSTIK
high fidelity

# interphone

VERTRIEB GMBH

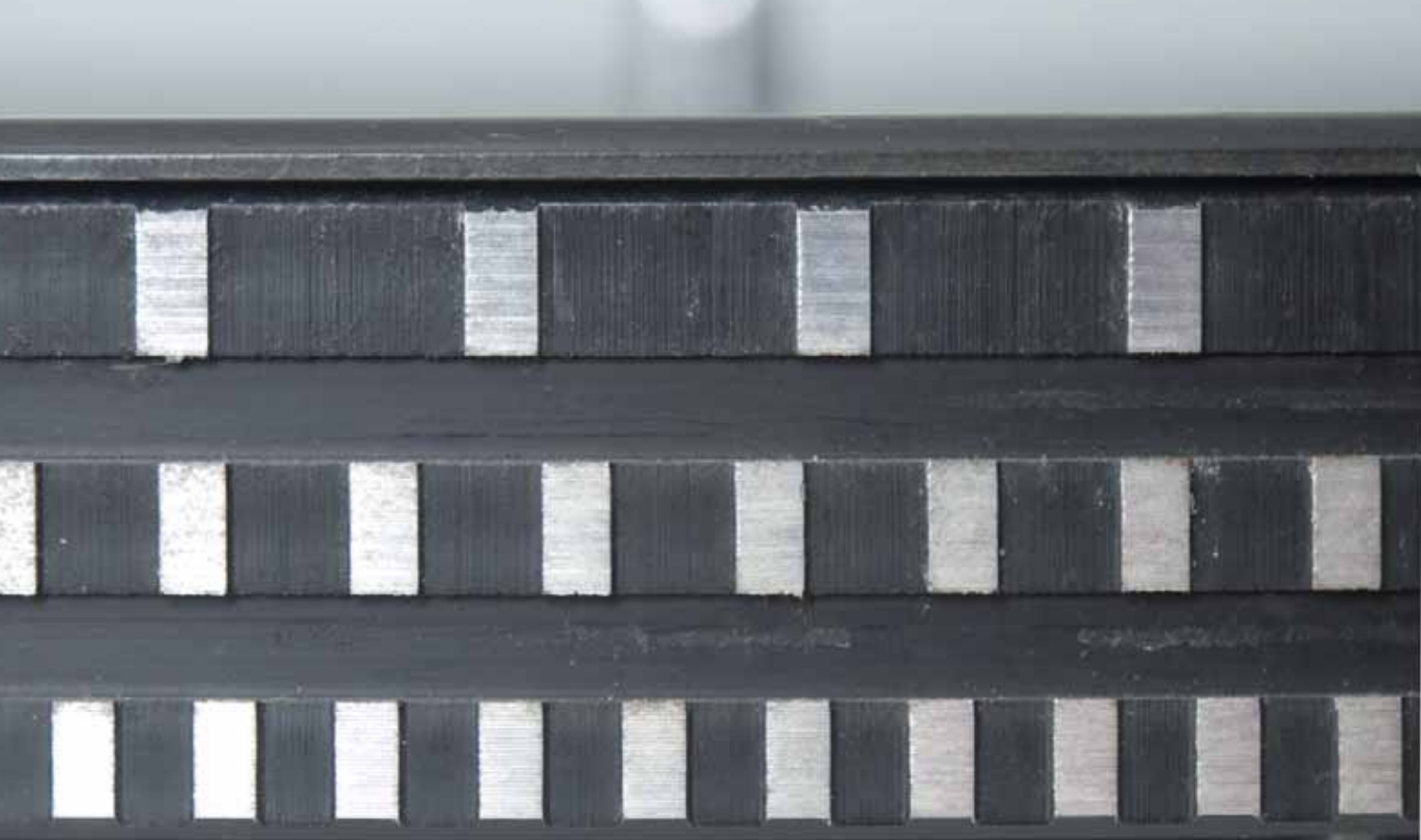
Frankfurt a. M. · Bockenheimer Anlage 7 · Telefon: (0611) 55 35 35

Generalvertrieb für Deutschland:  
High-Fidelity-Studio-Plattenspieler

## Lenco L70

high fidelity
ELEKTROAKUSTIK
high fidelity
ELEKTRONIK
high fidelity





## Setting the Standard

Garrard 301 and 401 – Thorens TD 124's Foreign Rivals

If I remember correctly, I was 20 or 21 when I was in the habit of sauntering through the hi-fi stores of my home city Frankfurt every week. I had already been heavily infected, and could spend hours looking at precious hi-fi systems. One day, a customer dragged a turntable the likes of which I had never seen into one of the stores. I couldn't get three details of this exceptional machine out of my head. Two of these comprised the unusual ivory-colored paint of the chassis and the name Garrard on the riveted nameplate. Mainly, however, it was the exceptionally weighty platter that impressed me, since I had only seen stroboscope disks made of cardboard up to that point. Its high edge bore precisely engraved stroboscope markings for the rpm speeds  $33\frac{1}{3}$ , 45, and 78.

The English Garrard 301, which had so impressed me, came to the market in 1953, four years earlier than the Thorens TD 124. The apparatus designed by Edmund Mortimer was Garrard's first top-class transcription turntable able to play all three of the record formats in use at the time: 78 shellac records with normal grooves, the new 45 singles developed by RCA, and the  $33\frac{1}{3}$  speed long-play records from Columbia featuring micro grooves.

The chassis of the earliest machines were painted a grey hammer tone and were fitted with a greased main bearing. From 1957, the manufacturer, who was located in Swindon near Bristol, delivered it in an ivory color and the bearing assembly was later modified to



Riveted name plate on the Garrard 301



take oil rather than grease. The later oil-bearing units were recognizable by the "Schedule No. 2" marking on the name plate. One year later, the ivory-painted tonearm TPA/12 followed for playing mono and stereo records. The working height and stylus pressure of the arm, which featured a removable plastic head shell, was individually adjustable.

### Seemingly Trivial Task

In Germany, the Garrard 301 was featured in only one single article that was published in a 1961 issue of the magazine *Funk-Technik*. In the introduction to this article, the author pleads technical knowledge to understand the turntable's task. Some audiophiles believed that a hi-fi quality problem could be solved with a high-quality cartridge such as a model with an integrated tonearm like the M 212/M 216 Stereo-Dynetic by Shure or an electrodynamic cartridge by Ortofon or Neumann. For this reason, the author said, the turntable didn't receive the attention it deserved since its task of revolving the record at a constant angular velocity seemed trivial. Then *Funk-Technik* wrote:

"This seemingly simple task becomes a complicated problem at the moment when one puts hi-fi quality demands on the constancy and regularity of the platter's rotational motion. The introduction of the long-play

record with  $33\frac{1}{3}$  revolutions per minute considerably raised general demands on the turntable because irregularities in the rotational motion are much more noticeable at lower speeds. Additionally, one needs to take care that no vibrations from either the motor or the outside can be conveyed to the cartridge. Above all, high-quality cartridges with low stylus pressure are often quite sensitive in this regard."

Thus, a good turntable should have two important characteristics: first, low wow, flutter and rumble levels that remain inaudible under all circumstances, and second, great certainty that this state remains so even after many thousands of hours of played records.

The Garrard 301 and SME 3012-R in a Maxplank base of burr elm veneer





# Pioneer of Single Groove Stereo

Arnold Sugden and His Remarkable Connoisseur Turntables

Connoisseur's name has long been forgotten among most audiophiles, and in Germany this brand never played a role. Despite this, A.R. Sugden (Engineers) Ltd., at home in England's Brighouse, West Yorkshire, garnered a reputation for itself in three decades as a manufacturer of record playing products with unique detail solutions. Something that hardly a soul in England knows is that Connoisseur had already presented the first stereo records to an amazed public in 1956 – two years before the big record companies came out with them.

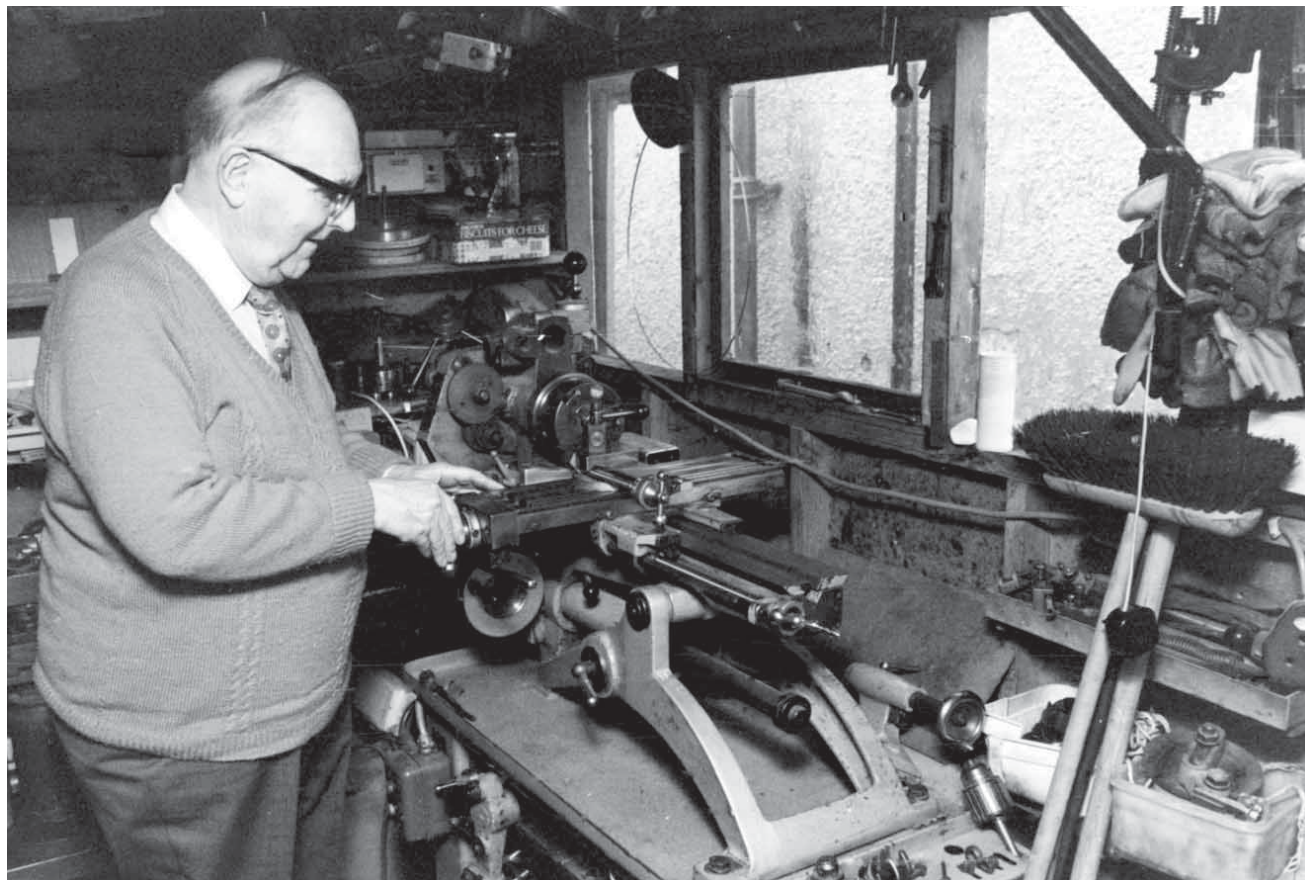
Arnold Sugden was the enthusiastic managing director, technical director and owner of the Connoisseur company. The tireless innovator tackled practically everything concerning sound reproduction and recording. Pick-up arms, cartridges, amplifiers, loudspeakers, and even microphones – all came out bearing the Connoisseur label. As early as 1950, Connoisseur was manufacturing a 33/78 rpm turntable, a high quality pickup with interchangeable heads, and a two-speed disc recording system.

"All this is the more remarkable if you know that Sugden left school at age fourteen and never had any formal engineering training," wrote Reg Williamson in the U.S. magazine *Audio Amateur*. "But, from the outset of his career, he demonstrated a natural flair for

engineering design of an intuitive kind that is all too rare these days. No matter what the problem, Arnold Sugden would come up with an ingenious answer and a high precision product – a remarkable man, very much in the Edison tradition."

The first commercial tape recorders represented serious competition for the record. Two-track tape heads even allowed recordings to be made in stereo. When Sugden experienced his first stereo presentation on magnetic tape in 1952, it both fascinated and alarmed him: Was this to be the end of discs and the product range he had so carefully nurtured? Or could the improvement of stereo reproduction be captured on disc and a new lease of life be brought to the long-playing record?

Arnold Sugden continued working in his shed even after retiring

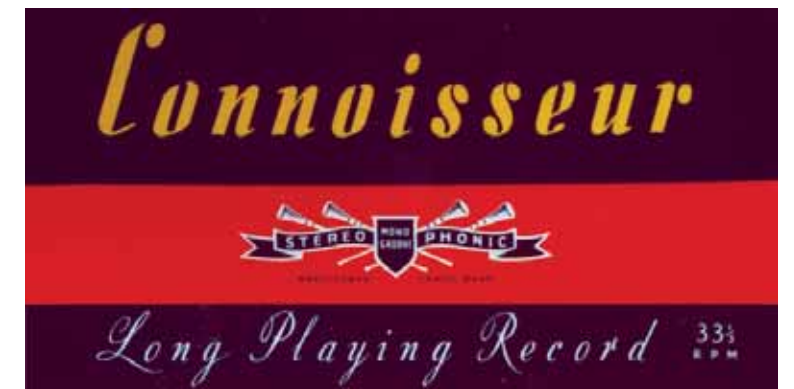
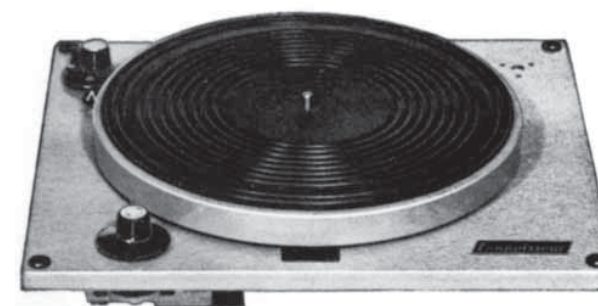


## Combination of Lateral and Vertical Methods of Recording

To answer the question, the head of the company first got himself a tape recorder with two channels and made some stereo recordings. He decided that it should be possible to record both channels in one microgroove by driving the cutting stylus laterally with one signal and vertically with the other, while retaining the independence of the two signals. That was in no way a natural conclusion, for in the U.S. Emory Cook had already experimented with "binaural" records on which each channel was cut as a separate set of tracks. They required two cartridges starting on the disc in synchronization to reproduce the recorded material. Cook's records were, nevertheless, an ergonomically impractical idea. Sugden thought that the main advantage of his system would be that it would play for the same length of time as a mono record. Additionally, a cartridge conceived for a single groove stereo would also be able to reproduce mono records.

"It was just after the coronation in 1953 that Mr. Sugden constructed his first moving-coil cutter head, and the first experimental lacquers were cut," Roger Maude reported in the English magazine *Hi-Fi News*. "The 15Ω coils required only five watts to drive them fully, which was well within the capabilities of the Connoisseur 20W amplifiers he was using. This cutter head was continually refined to give good separation and a bandwidth extending up to 15kHz." Sugden still needed a corresponding cartridge for stereo reproduction, so he simply took two crystal cartridges, mounted them at right angles to one another, and coupled the two styli with a fine wire link.

Connoisseur type B three-speed turntable



Label of a Connoisseur lacquer stereo disc



## Sensation in London's Waldorf

After three years' work, the lacquer stereo discs were ready for public demonstration. On May 26, 1956, people stood in line in London to experience the sensational spatial sound coming from one single groove at the British Sound Recording Association's exhibition at the Waldorf Hotel. The record industry, which had not shown much interest up to that point, stormed Sugden to get sample discs and cutters. EMI even sent a large, mobile-recording studio to his factory so sample discs could be cut from a variety of their own master tapes. However, two years later an international committee agreed to adopt the 45/45 system of groove modulation, proposed by Alan Blumlein as early as 1931, and Connoisseur's system was dropped in the interest of uniformity.

Despite this setback, Connoisseur's business developed positively within the framework of the English hi-fi boom. In 1959, the variable three-speed turntable Type B featuring a synchronous motor was introduced to the market. The chassis was crafted in a heavy zinc alloy die casting, well ribbed for strength, and finished in silver hammer. It was drilled to take the Connoisseur Super Lightweight Pickup. The full twelve-inch platter was lathe-turned and manufactured of non-ferrous material. Underneath the turntable, a large stroboscope disc was fitted that could be viewed through a reflecting mirror using an internal light source.



“This machine looks and feels like a lot of hi-fi.” This assessment in a test report was something I could only agree with when I saw the Dutch Acoustical turntable for the first time in the window of a hi-fi studio at the beginning of the 1970s. The little store was the most exclusive address for high fidelity in Frankfurt at the time, known for its individualistic stock. A princely greyhound slinking around customers’ legs underscored the high-class character of the store. I was fascinated by the luxury version of Acoustical model 3100 fitted with an extra-wide walnut base, a Plexiglas lid with wooden boards on the side, and the long SME tonearm.



The Acoustical 3100  
with the Grace G-840  
tonearm

Unfortunately, I have never owned an Acoustical. I can't get it out of my head to this day, however. Its typical element was the silver-grey covering with the stroboscope window going around the platter, lending the machine an elegant look. Only the rubber mat decorated with concentric wreaths rises above this encasing. Since the practice of clearly displaying technology was not yet trendy, the manufacturer obviously found it necessary to hide the turntable's energy transmission from the eyes of its user. This was definitely an interesting element 45 years ago, for the Acoustical, along with its American relative Empire 208 (→p. 170), was the harbinger of a drive principle that is completely normal today.

In Amsterdam in 1959 Ton de Boer had the idea of designing a turntable with its motor not underneath, but rather next to, the platter. As if that weren't enough, in the middle of the idler wheel's heyday de Boer planned on having the outside edge of his platter driven by a long rubber belt. As soon as the model was ready for serial production, he christened it Jobo. He also contributed its successful design featuring a lid around the platter. The Jobo 2600 was fitted with the 33<sup>1</sup>/<sub>3</sub>, 45, and 78 rpm speeds, an eddy current brake for the fine adjustment of the platter's revolutions, and the self-developed All Balance tonearm. From 1960, the manufacturer used a better motor made by

Left: advert in the magazine *Radio Bulletin*, 1960

**HI-FI**  
MONOPHONIE  
STEREOPHONIE

Waterpas.

Krachtige condensatormotor, 12 spoelen, 6 polen.  
Geruisloze en onverwoestbare T-snaaraandrijving.

Pulley controle dop.

Toerentalkiezer en fijnregeling.  
Grendelknop voor toerentalkiezer.  
Toerentalaanwijzer, 33-45-78 omw./min.

Precisie gedraaide 30 cm anti-magnetische draaitafel.  
Rubber mat met speciaal profiel.  
Automatische centreerring.

"All Balance" pick-up arm.  
Direct afleesbare naalddrukinstelling.  
Instelbare kogellagering.

Instelbare druktabel pick-up lift.

Brilliant verlichte stroboscoop.

Jobo Patent pick-up geleider.

Uitwisselbare pick-up kop.  
Vingergreep.

Pick-up lift hefboom.  
Schakelaar aan-uit.

Voor inbouw met "All Balance" arm f. 275.-  
Excl. pick-up element  
Edelhouten standaard f. 30.-  
Type 2500 zonder pick-up lift en pick-up geleider f. 245.-  
Excl. pick-up element  
Leverbaar met elk gewenst pick-up element.

# Jobo 2600

PROFESSIONAL  
PLATENSPELER

De nieuwe Jobo 2600 platenspeler is in productie genomen. Elk detail werd beproefd, voordat het zijn plaats kreeg. Technisch raffinement en materiaal - dat de strengste eisen glansrijk doorstond - vormden een combinatie waaruit de Jobo 2600 werd geconstrueerd. Nu staat hij voor u klaar. Bekijk 'm, test 'm, u zult enthousiast zijn!

JOB O N.V. · LEIDSEGRACHT 90 · AMSTERDAM · TELEFOON 30705 - 33153

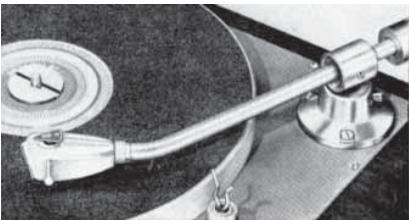


# Exotics from the United States

Turntables by Empire and Rek-O-Kut: Practically Unknown in Europe

In the United States, these turntables counted among the established hi-fi products, while in Europe they were practically unknown: Empire and Rek-O-Kut. Switzerland was an exception to the rule since some models of the latter brand played a small role. Solvent Swiss were more open to American products by the end of the 1950s: tube amplifiers and tuners by McIntosh, H.H. Scott, and Fisher ensured sound enjoyment in some posh residences on Lake Geneva or the Tessin area.

Thus it should come as no surprise that Egli, Fischer & Co. – a top address for hi-fi in Zurich – also carried reputable U.S. products. By 1946 Willy Egli had established contact to England, bringing the first hi-fi products to Switzerland in the shape of loudspeakers by Celestion. A little while later, amplifiers, tuners, and loudspeakers by Quad followed thanks to Egli's good relationship with Peter Walker, head of the company. "Adjust the tuner or put on one of your favorite records," this wholesaler/retailer encouraged his solvent clientele. "Close your eyes. You have the best seat right in the middle of the orchestra. That is high fidelity."



The Rek-O-Kut 120S tonearm



In order to reach this perfection, an exceptionally good reproduction mechanism was needed that couldn't be compared with conventional machines. A mediocre phonograph would be like a fair-to-middling interpreter, "skipping the refinements," according to Egli, who recommended models made by U.S. manufacturer Rek-O-Kut alongside the local Thorens TD 124 models for professional use and high-quality hi-fi systems.

"For more than five years we have devoted our best thinking and engineering efforts to developing the perfect turntable," the company located in Long Island City, New York, informed the reader in a brochure. "Admittedly, this is an unattainable goal. But, by setting our sights to the highest possible standards, we have been able to achieve the closest approach to this perfection. It is, therefore, with considerable pride that we offer you the new Rek-O-Kut 12-inch Rondine turntables: the Rondine Deluxe, the Rondine, and the Rondine, Jr. We are satisfied that these are the finest 12-inch turntables we have ever built."



## Double Idler Wheel Drive

This company's simplest model was the Rondine Jr. painted in hammertone gray, which could only play  $33\frac{1}{3}$  and 45 rpm speeds. "For some time, there has been the expressed desire for a high-quality turntable that would provide only the two currently popular speeds," the manufacturer explained upon introducing the model. "This demand arose particularly among the newcomers to high fidelity who find that they can fill all of their music requirements with either  $33\frac{1}{3}$  or 45 rpm records. In considering this demand, Rek-O-Kut realized that the exclusion of one speed would simplify some of the design and construction procedures and that this simplification would permit a lower cost with no compromise in quality."

Switching between the two speeds is done on this turntable by a slide shift with an intermediate off position. Shifting between speeds also meant switching back and forth between two idler wheels of different diameter, each of which had the task of driving the turntable at only one of the two  $33\frac{1}{3}$  and 45 rpm speeds. Rek-O-Kut described this unique arrangement in a brochure:

"The 12-inch turntables are internally rim-driven, employing neoprene compound idlers for smooth drive traction. One of the most noteworthy advances embodied in these turntables is in the technique of mechanical filtering. By employing the floating idler principle, we have achieved virtually complete acoustical isolation between motor and turntable. This has effectively reduced noise and distortion to insignificant proportions." At another place in the brochure: "Drive-

pulleys are made of special lamitex, pressed onto, and ground directly on, the motor shafts. This technique assures absolute centering of the pulley on the shaft."

Further details of the Rondine models are described as follows: "The platters are made of cast aluminum, and exert no 'pull' on magnetic cartridges. They are precisely lathe-turned and dynamically balanced with extra-heavy rims for effective flywheel action. Record slippage is eliminated by the use of a cork-neoprene mat material. Ball-point bearing suspension provides the closest approach to friction-free moving. The motors are built to rigid Rek-O-Kut specifications. Shock-mounting and other mechanical filtering measures are employed to assure maximum acoustical isolation between motor and turntable."

The Rek-O-Kut B12GH turntable and its bulky speed selector





Professional pick-up arms



PICK-UP ARM TYPE RK and RKG

for exchangeable heads  
Distance between disk center and arm center: 309 mm.  
Stylus pressure adjustable by means of movable counterweight.  
Rubber damping between arm and counterweight.  
Height over mounting plate adjustable.  
All ORTOFON cartridges can be mounted into the shells.



PICK-UP ARM TYPE RM and RMG

for exchangeable heads  
Distance between disk center and arm center: 309 mm.  
Statically balanced, stylus pressure adjustable by means of a spring.  
Rubber damping between arm and counterweight.  
Height over mounting plate adjustable.  
All ORTOFON cartridges can be mounted into the shells.

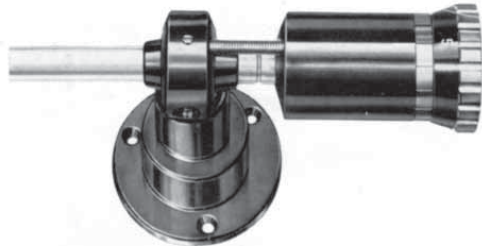


Studio Arm of Extreme Length

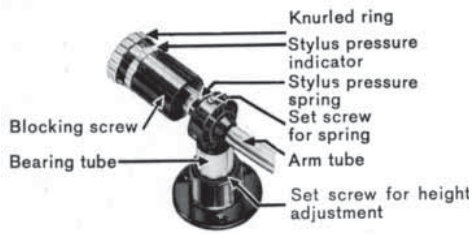
The Ortofon RMG 309 tonearm was available for playing 16-inch records in recording and radio studios. Stylus pressure set by a spring as on the RMG 212, the arm including head shell and cartridge was first adjusted horizontally. Then the desired stylus pressure could be precisely set to a fraction of a gram using a ring-shaped scale. The counterweight was adapted to balance a total pickup-head weight of 31 grams. If a lightweight cartridge was installed, additional weight must be applied in the shell to make the total head weigh 31 grams. The extreme length of the RMG 309 accounted for the very small tracking error of 0.83 degrees maximum. Precision ball bearings guaranteeing little friction, the RMG 309 fulfilled demands for both the studio technician and the discriminating audiophile.



The RMG 309 tonearm on a Delphon turntable



Counterweight of the RMG 309 tonearm and its details



Technical Data of Pickup-Arm Ortofon RMG 309	
<b>Dimensions</b>	
Total length	400mm (15.75")
Distance between center of arm base and center of turntable	309mm (12.17")
Range of adjustable height (center of arm and tube to mounting plate)	36-61mm (1.4"-2.4")
Diameter of arm base	50mm (2")
<b>Specifications</b>	
Effective length (center of arm base to stylus tip)	320mm (12.6")
Offset angle	15.9°
Maximum tracking error at the outer edge of a 12-inch record	0.83°
Optimum overhang	11mm (0.43")
Adjustable stylus pressure	0-7 g
<b>Weights</b>	
Pick-up head	31g
Pick-up arm	600g





The SME factory in Steyning, Sussex, England

The SME tonearm displays a certain flair for functional technical elegance, and each detail reveals its solid workmanship. “One could sit in front of this arm and pat it for hours,” Donald W. Aldous and David Phillips of the magazine *Gramophone Record Review* in Great Britain enthused when the arm was introduced to the press. The tonearm, conceived as a tube construction, was delivered in two sizes. The short model with an effective length of 214 millimeters bore the name SME 3009. The extra-long variation of 304-millimeter effective length, SME 3012, was conceived to play 16-inch records in tone and radio studios and was expressly recommended by the manufacturer due to little tracking error. However, the 3009 also fulfilled all demands and was one of the most frequently employed.

“Modern developments in disc recording, especially since the introduction of stereo, have produced cartridges to fulfill increasingly exacting requirements,” SME said by way of introduction in the brochure for its new tonearm. “However, less attention has been paid to carrying arms. These influence reproduction to a degree that is seldom suspected. Many high-quality amplifiers, speakers, etc. are used with equally good cartridges on arms quite crude by comparison. Some in current use require a force of more than three grams to set them in motion.” A good tonearm must be able to hold and lead the cartridge above the groove almost as if it did not exist. Additionally, its bearing must be as friction-free as possible.

The SME tonearm uses two different precision bearing systems to achieve a practically friction-free state. Two high-quality, dust-free ball bearings guarantee vertical axis motion. The lateral spindle comprises two hardened and very exacting steel knife-edge bearings, which rest precisely in v-shaped grooves just like those that are found on chemical analysis scales. The

Base of a perfectly preserved tonearm from the first series



tonearm’s gimbal is basically similar to that of the Ortofon RMG 309. On a balanced tonearm, the tip of the cartridge’s stylus needs a weight of only 0.02 grams to change the SME’s position. “The bearing friction, both lateral and vertical, are less than one-tenth of those of any commercial arm I have ever tested, even the so-called transcription type,” a satisfied editor of the English magazine *Gramophone* discovered in January 1960.

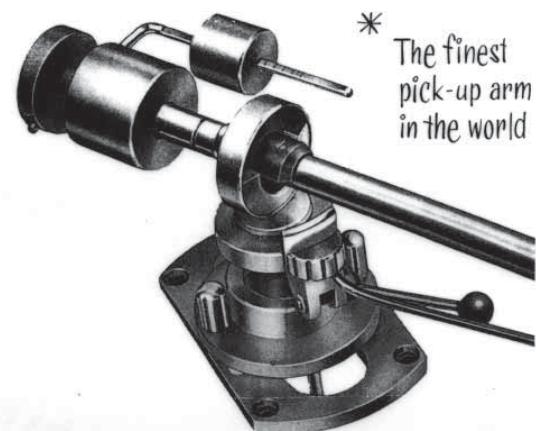
On such a precise bearing, it is naturally also important to balance out all the weights exerting bilateral pressure on the arm. Only then can it hold the cartridge as if it were in reality not there. A very clever system of weights serves to compensate: first there is the adjustable main balance weight, located on the tonearm right behind the knife-edge bearing that can be fixed in position with the aid of an Allen screw. Secondly, there is an additional smaller weight fitted on a separate parallel rod; lateral balance is achieved

by moving this weight and rod sideways together. Using a scale on the rod graduated in increments of 0.5 grams, stylus pressure from 0.5 to 5 grams can be applied by moving this weight along the rod. “This is so precise,” SME explained in a brochure, “that it makes the use of a tonearm scale superfluous.” Since the tonearm is curved toward the middle of the record in order to the decrease tracking error, the weight for setting stylus pressure is located on the outside of the tonearm tube. This way, tilting force caused by the cartridge head around the tonearm tube is also evened out.

## Head Shell According to Ortofon

The “original version” of the SME arm was created for the Ortofon cartridge. For this reason, the black plastic head shell featuring the SME logo precisely corresponds to the G model made by Ortofon. The head, connected to the arm by four spring-loaded contact pins, allows all standard cartridges with standard attachments to be used. Since the length of the cartridges and the position of the styli are all different, the SME tonearm possesses a sliding guide

A motif from the SME brochure from 1959



Only when your equipment includes one of these superb arms can the full possibilities of disc reproduction be realized.

Their many features include:—Mirror finished pillar bearings. Arm carried on virtually frictionless knife edges. Automatic lowering and raising anywhere on the record by hydro-mechanical control. Sliding base for instant tracking correction. Vertical height adjustment. Unique system provides for lateral and longitudinal balance of arm. Stylus pressure range 0.5 grammes. No weighing device required. Suitable for all stereo and mono cartridges. Decca ffs, Expert special, Ortofon heads, etc. permitting hitherto unobtainable quality.

Prices: Model: 3009 9" Arm £18 15s. 0d. + £6 5s. 0d. U.K. P. Tax Model 3012 12" Arm £29 12s. 6d. + £6 17s. 6d. U.K. P. Tax

Manufactured by  
**S.M.E. LTD · STEYNING · SUSSEX · ENGLAND**  
Telephone: Steyning 2228

The first advert for the SME tonearm







A Thorens TD 124/II  
with a Shure Dynetic  
M 222 tonearm



U.S. patents. It was delivered in two lengths: model M 212, which measured 21.59 centimeters from its vertical axle to the tip of its stylus, and model M 216 with 27.94 centimeters effective length for playing 16-inch transcription records at radio stations. “The arm’s relatively high price of 404.15 German marks was accepted after only a short time and at first even only on appearance,” *Funk-Technik* wrote. “You don’t need any engineering knowledge to know that in this product you have a masterpiece handcrafted with the highest precision in front of you instead of a mass-produced.” Then the magazine dedicated itself to a number of elementary aspects of record tracking.

### Careful coordination of tonearm and cartridge

“If you want to achieve optimal quality with a cartridge system, you must see the cartridge and arm as a whole. Only the careful coordination of both parts results in the best reproduction quality while protecting the record as well as possible. Testing done years ago by Miller [1] and Hunt [2] displayed the importance of low stylus pressure. The average modern six to ten grams stylus pressure results in surface pressures specific to the diameters of the styli that often cross the border of the record material’s elasticity, resulting in wear and tear on the record. Staying within a range of one to two grams brings additional problems to light, which can only be solved when the cartridge and the tonearm are precisely coordinated. Working with such low stylus pressure demands to a large extent reduction of all masses and perfect balance if one would like to avoid the stylus jumping out of grooves in cases of shock. The tonearm must also be carefully damped in order to avoid creating any additional rumble as a result of tonearm resonance. Finally, a cartridge working with such low stylus pressure needs a tonearm that is practically friction-free, thus exhibiting almost no resistance to the free motion of the stylus.”



Top: tonearm pillar  
with counterweight  
Bottom: vertically  
moving part of the  
tonearm with its  
delicate head

## American Partner

The Stereo Dynetic, Professional Tonearms, and Stereo Cartridges by Shure

“The opportunity of making a tonearm and cartridge just for the purpose of getting the best record reproduction must be a true joy for a designer,” Ernst Pfau wrote in *fono forum* in 1960. “Shure Brothers Inc. in Evanston, Illinois gave their technicians exactly this opportunity. The result turned out to be the dream of every audiophile spanning the globe. The Shure Stereo Dynetic tonearm possesses mechanical and electrical characteristics that leave practically nothing to be desired.”

At this time, Germany’s hi-fi experts had been saying truly wonderful things about a cartridge system by Shure, which had been described in the U.S. as the best ever. Garrard’s Frankfurt distribution (→p. 226), a company that also imported the Stereo Dynetic tonearm, spread its praise, “Precision and perfection are the internationally recognized elements of this tonearm combination. Because of it, sound reproduction is in absolute high fidelity, and transparency and silky softness become audible. You will discover subtleties in timbre and tone that you had never thought conceivable in records. For the first time, record pickup

is possible with feather-light stylus pressure of only 1.5 to 2.5 grams.” Even serious special interest magazines – *Funkschau* and *Funk-Technik* along with *fono forum* – occupied themselves with the revolutionary product at the beginning of the 1960s.

Shure described its Dynetic tonearm as “integrated” since its cartridge and arm were delivered as a unit from the factory. Cartridges other than the Shure M 21, whose appearance already made it seem different, could not be used with the arm, which possessed a number of other special elements as well as several

[1] Miller, F. G.: “Stylus groove relations in phonograph records,” Acoustics Research Laboratory, Harvard University, Technical Memorandum no. 20 (1950)  
[2] Hunt, F. V.: “On stylus wear and surface noise in phonograph playback systems,” J. Audio Engineering Society, volume 3 (1955), no. 1, page 2-18





Thorens invented a much more elegant electronic automatic turn-off for its TD 126 and TD 145 turntables that reacted to the higher speed of the tonearm as it moved to the final groove after the last track of the record had been played. It thus had the advantage of raising the arm only after the last bit of music was over – even on very full records.

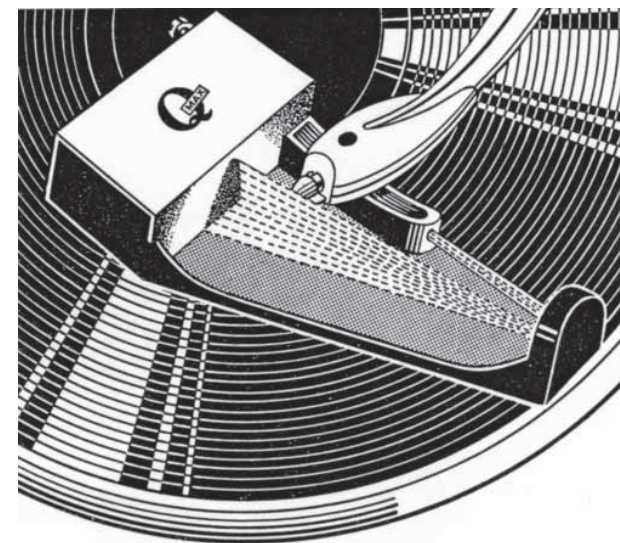
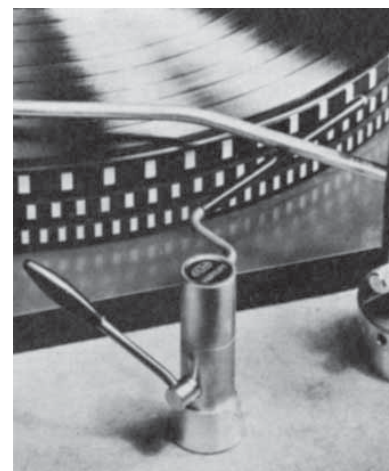
Another English invention was the Pickup Control – a combination of tonearm lift and a device that helped the listener more easily find certain spots on the record. Additionally, the device contained a precisely graded angle scale on its widely arcing tonearm gantry. “Auriol is the only control that will position your stylus precisely,” manufacturer Auriol of Guildford wrote of its original product. “It readily gives location accuracy within one microgroove, at any pre-selected part of a record including the first groove. The unique pneumatic lowering at variable pre-set controlled speed provides cushioned contact; this, with controlled lifting at any position, completely eliminates any possibility of damage to records and stylus. Patented and proved in use throughout the world – it is suitable for use with any make of pickup arm.”

### Tonearm Scale by Garrard

Alongside its turntables, Garrard also offered accessories such as the tonearm scale SPG 3. “It is vitally important that the stylus pressure should be correct when playing modern records,” the manufacturer wrote in a brochure at the beginning of the 1960s. “The Garrard Stylus Pressure Gauge has been designed to provide an inexpensive and simple method

Complement  
high class  
equipment  
with well  
designed  
quality  
accessories.

Colton products,  
from top to bottom:  
Varilift, Needle  
Timer, Magnalift



Q-Max testing device  
for cartridge styli

of measuring this pressure. The gauge is elegantly styled and has an easily readable scale visible through a clear plastic window. It is accurate through the entire scale, 0-12 grams.” In Germany this scale, which was reviewed in the hi-fi magazines *fono forum* and *Funkschau*, was available from Garrard Audioson.

To measure the stylus pressure, one put the scale on the turntable’s chassis and carefully lowered the stylus into the small hollow of the setting lever visible at right in the picture below. Then, one turned the large knurled knob on the scale until the tonearm was just raised. The stylus pressure could be read on the large scale underneath the transparent cover to within 0.5 grams. To precisely set the Garrard scale, a calibration weight of 5 grams was placed in a small compartment. Later adjustment was done by moving the screw in the middle of the large knurled knob.

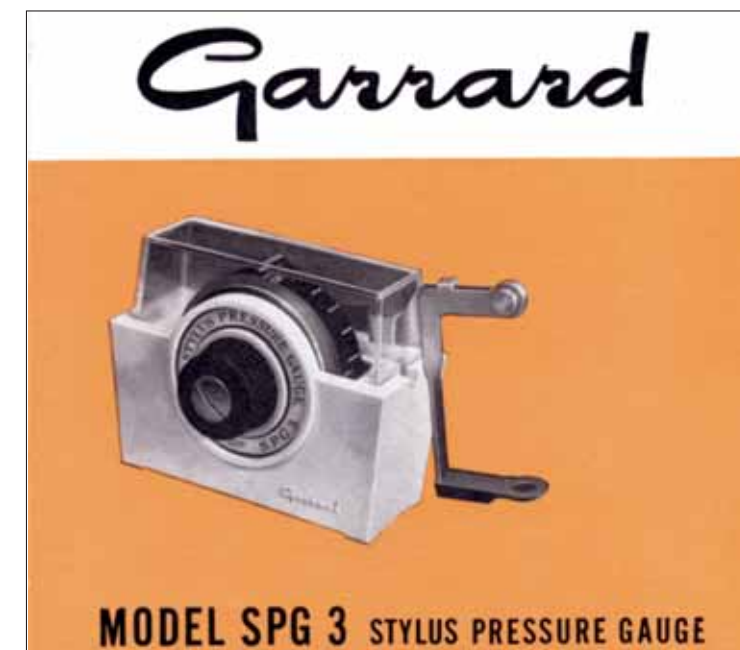
### Testing Device for Cartridge Styli

“The quality of the record’s reproduction is largely dependent upon the quality of the stylus used,” Hans Herbert Klinger wrote in the magazine *fono forum* in 1961. “Worn stylus tips don’t only cause distortion in reproduction, but also damage fine grooves and thus destroy the record. Recently, a simple and inexpensive testing device for cartridge styli has been introduced to the market.”

Stylus tester Q-Max, which was distributed in Germany by Herbert Anger (→p. 219), comprised a small lamp, a testing case, a mirror, and a battery case. To test

the stylus, the Q-Max was put on the platter and the stylus lowered into a small opening in the wall of the testing case. The light ray running through the case showed the stylus tip reflected in the mirror as a highly enlarged silhouette on the white battery case. “Each and every distortion of the stylus tip, regardless of how small, becomes clearly visible in this way,” Klinger admonished. The magazine didn’t only recommend the Q-Max as a practical accessory for every audiophile, but also for hi-fi retail as an inexpensive testing device that “did the same job as the much more expensive stylus microscopes.”

Hi-fi importer Döll in Hanover (→p. 230) offered the English Decca stylus cleaner for the continuous cleaning of styli. The device and its plush roll were secured directly underneath the stylus near the tonearm rest and, according to the same principle used





“The separate loudspeakers are the weak link. You get two boxes put in your room whose system is not prepared to handle the increase. Housewives are completely against it: pieces of furniture hanging on cables are not their thing. For this reason, one must unfortunately see that the great majority of the German population until now has in no way understood what stereo even means and what possibilities it can offer. Recently, an audiophile played his hi-fi system for a jury of orchestra directors, expert journalists, and music students. The auditorium full of people was enthusiastic and spared no praise for a quality of reproduction not thought possible. However, most of these men did not know what this new technology was capable of – thanks to a failure to advertise. Until today, there has not been one big advertising campaign made to enlighten the general public. And the worst part of it is that there are still almost no retail stores that deem it necessary to create a demonstration room that would be able to convince the customer of the sound advantages of stereophonics using a correctly installed hi-fi system.”

Excerpt from a reader's letter to the magazine *Funkschau*, 1961



Rolf Ullmann on Taunusstrasse, where Herbert Anger had his store  
Photo: Ilona Surrey

## “The Boss had an Immense Feel for Coming Trends”

Hi-Fi Salesman Rolf Ullmann Remembers the Beginnings of High Fidelity in Germany

Frankfurt, October 1, 1959: A young man takes a turn onto Taunusstrasse, marking the beginning of his apprenticeship as a wholesaler. What the 20-year-old could not know at the time was that this apprenticeship would mark the start of a career as one of the most successful salespeople in hi-fi. Today, Rolf Ullmann is retired, and like no other he is able to describe high fidelity from its very beginnings. He not only experienced it first-hand in Germany, he helped form it ...

It was a day like any other this fall morning when the young man began his practical education to become a salesman in the train station quarter – not exactly the best area of Frankfurt. Average guys carrying briefcases got out of the street car and walked quickly toward various offices. GIs appeared looking like they had partied all night, uniforms stained with beer. As usual, the soldiers were looking for blond Frauleins with long legs and tight sweaters in red-light bars and at Maier Gustl's Oberbayern pub. Ullmann didn't notice them: he was occupied with something else. What awaited him at the new company?

At the time, Herbert Anger was a sales representative for the U.S. company General Electric and had a great deal of newfangled products from the land of opportunity in his distribution program: dishwashers, which celebrities and rich people quickly warmed to, air conditioners, and freezers – machines that today get top dollar at 1950s auctions in Germany. “My boss spoke several languages,” Ullmann now describes the progressive head of the firm. “The company logo was made up of his initials in the midst of a model of an atom which was somewhat unusual in the era of radio and phonograph. Additionally, Anger had an immense



An ad from the German Garrard representation for model 301



only taken on commission, but also sold. Rolf Ullmann also greatly noticed the tough market situation. After his apprenticeship at Herbert Anger, he worked as a sales rep for American hi-fi machines and at times even thought of giving up. German radio dealers remained skeptical. At this point in time, hardly anyone was talking about music; they were all caught up in television fever. *Funkschau* reported in its column "New Prints" of a German "Garrard hi-fi catalogue" that contained cartridges, tonearms, turntables, changers, amplifiers, tuners, loudspeakers, and open reel tape recorders by special companies in England and the U.S. on 24 pages. The names of the companies represented there included: British Ferrograph Recorder Co. Ltd., Goodmans Industries Ltd., Leak & Co. Ltd., Orr Industries, Inc., Shure Brothers, Inc., Sherwood Electronic Laboratories, Inc., the Garrard Engineering & Manufacturing Co. Ltd., and Wharfedale Works Ltd.

Popular among U.S. army soldiers: Garrard record changer model A

## Garrard's Own Sales Subsidiary

When Herbert Anger booked his first ad for the Thorens TD 124 in the summer of 1959, he was not without competition. Just a few weeks previously, Garrard had established a subsidiary in downtown Frankfurt that also distributed tube amplifiers by Leak and loudspeakers by Goodmans. First ads in the magazine *Funkschau* were booked to aid in the search for retailers. Garrard had the leading branch of Radio Wächtershäuser as its retailer in Frankfurt, whose main store comprised four floors.

The typical turntable for home use comprised at the time a light chassis with a great deal of plastic, a tonearm with a crystal cartridge, and a platter that disappeared underneath the LP. Contemporary Wächtershäuser products included radio receivers in a walnut wood look and Chippendale-style phonographs containing simple industrial chassis. The third floor housed a small department dedicated to hi-fi, and it was there that the ivory-colored Garrard 301 could be seen and heard. In Germany, however, more of the A-type changer, which cost about 100 German marks less, were sold – especially to members of the U.S. army. The large Garrard also competed heavily with the Thorens TD 124, even though it was about 150 marks cheaper. The English model was too little-known despite its professional appearance, easy use, and impressive platter.

Garrard invested a great deal of effort into educating the retail trade about the new technology and the hi-fi machine imported from England. The sales force was especially pleased about every machine that was not



Radio Wächtershäuser on a fall evening in 1961; the arrow points to the little hi-fi department on the third floor