LM Sequential Flyback

MB&F

For more information, please contact:
Charris Yadigaroglou
cy@mbandf.com
Arnaud Légeret
arl@mbandf.com
MB&F SA, Route de Drize 2,
CH-1227 Carouge, Switzerland
+41 22 508 10 38

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The quick facts

- **The LM Sequential EVO, released in 2022, was MB&Fs’ first chronograph and 20th calibre; it featured significant technical innovations and an unprecedented combination of timing modes thanks to its “Twinverter” binary switch: independent timing, split-second, cumulative and lap-timer modes. It won the GPHG ‘Aiguille d’Or’, the most coveted prize in watchmaking.**
- **The new Flyback edition goes further than the previous EVO editions: on top of the previous timing modes typically associated with motor racing, it adds the flyback function originally conceived for pilots, bringing the Sequential into the world of aviation.**
- **The new Flyback edition with sky blue dial plate comes in the more classic Legacy Machine styling, in a platinum case with screwed lugs and white lacquered dials – including a tilted hours and minutes dial – on a leather strap.**
- **The Sequential and Sequential Flyback movements were conceived and developed by Stephen McDonnell, who previously created for MB&F the award-winning LM Perpetual.**

In 2022, MB&F unveiled its Legacy Machine Sequential EVO, a twin chronograph that opened up a world of timing possibilities. This ground-breaking chronograph redefined the chronograph as we knew it, winning the hearts of collectors and the coveted GPHG ‘Aiguille d’Or’ award the same year.

Conceived by Stephen McDonnell, one of the original MB&F Friends and the mastermind behind the 2015 LM Perpetual, the LM Sequential EVO was one of those timepieces that was so profoundly useful that it made you wonder why no one had thought of it before. Multiple timing modes allowed you to time everything from two athletes at the same time to consecutive lap times around a track, and even two different dishes in the oven, to name a few of its extremely practical applications.

But if the LM Sequential EVO wasn’t mind-blowing enough, there was another feature that Stephen and MB&F were keen to include: the flyback function. Stephen’s original prototype movement was actually designed with a flyback system on the left-hand chronograph and provisions for it were built into the LM Sequential EVO. But it was extremely complicated to perfect with the watch taking nine months of prototyping, four of which were dedicated to the flyback function alone. Add to this six different re-designs, and all the work and components that went with them, and McDonnell felt that it would be unwise – reckless even – to release the watch with a flyback when there were so many unproven elements in play.

But the dream was there, right from the very beginning, and everything was designed to be able to incorporate it at a later date. The chronographs could have been conceived in several different ways, but only one of these configurations would allow the inclusion of a flyback, changing the fundamental way the chronographs were designed.

The internal jewelling of the vertical clutches is the key to the whole Sequential chronograph, and the new flyback system also requires jewelling, without which it would not work. The system is very subtle, and a great deal of work went into reducing all the friction to a minimum so that the flyback did not cause the return-to-zero to block. To achieve this, McDonnell incorporated a special jewelled roller into the flyback mechanism. Such a component is unavailable directly from any supplier of jewels, so for the first prototype, McDonnell made the jewel himself in order to prove the concept of this ground-breaking mechanism (one of five patented elements).

Two years of secret-keeping and testing were required so that the system would be robust enough in the long term, and now the LM Sequential Flyback Platinum is ready, steady, go!

Legacy Machine Sequential Flyback

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So, what can it do?

The LM Sequential Flyback Platinum features the same layout as the LM Sequential EVO with two chronograph displays. One has its seconds display at 9 o’clock and minutes display at 11 o’clock. The other has its seconds display at 3 o’clock and minutes display at 1 o’clock. Each of these chronographs can be started, stopped, and reset completely independently of the other, using the start/stop and reset pushers on their respective sides of the case. With the new flyback function, the reset pushers also trigger the flyback if the corresponding chronograph is running. These pushers make up the four chronograph pushers you would usually associate with having two chronograph mechanisms in one watch.

However, there is a fifth pusher, called the Twinverter, located at the 9 o’clock position. This “magic button” as Stephen likes to call it, is the secret that elevates the functionality of the LM Sequential timepieces beyond any existing chronograph wristwatch. It controls both chronograph systems, operating as a binary switch that inverts the current start/stop status of each chronograph. This means that if both chronographs are stopped, pressing the Twinverter causes both of them to start simultaneously. If they are both running, the Twinverter makes them stop. And, if one is running and the other is stopped, the Twinverter stops the one that is running and starts the one that is stopped.

In terms of practical applications, these functions allow the chronograph to be useful in numerous situations, as the following examples illustrate:

1. Independent mode

Imagine the preparation of a meal, where different things need to be cooked for different periods of time, at different points in time. You would operate the two chronographs via their respective pushers — for instance, starting one when you put your pasta into boiling water and starting the other when the vegetables go in the oven. In fact, this application comes in handy in all areas of personal productivity. At the gym, for example, when trying to optimize your physical workout routine, one chronograph can be set to time your entire session whilst the second is used to record your time at each station, or the downtime in between. In this example, the new flyback function can come in handy to swiftly reset and restart the timing sequence with a single press on the reset button, combining the three steps – stop, reset to zero, and re-start – in one.

2. Simultaneous or split-second mode

This mode can be used in a race involving two competitors, starting simultaneously. The Twinverter allows the wearer to start both chronographs at exactly the same time, but the different end times can be easily recorded by pressing each chronograph’s individual start/stop pusher. To note, the durations of the events can exceed 60 seconds, which is the limit for the vast majority of split-second chronographs on the market. In this mode, you can also use the new flyback function if you want to quickly restart timing.

3. Cumulative mode

In the work environment, you might want to know how much time you spend on two separate projects as you switch between them throughout the day. By starting one chronograph when you begin working on one task, and then using the Twinverter when you shift focus to the second task (switching again when you go back to the first), you can easily track the amount of time you cumulatively spent on each task. Another example of this usage is the timing of a chess match.

4. Sequential mode (or lap-timer mode)

For those timing competitive sports, this mode can be used to measure individual lap times. Starting one chronograph at the beginning of an event and using the Twinverter upon the completion of a lap instantly launches the second chronograph in order to time the next lap, while the first chronograph is stopped, allowing ample time for the timing result to be noted down. The stopped chronograph can then be reset to zero, ready to be relaunched with the Twinverter for the following lap. Thanks to its minutes’ totalisers, the LM Sequential can be used effectively in sporting events with average lap times of over a minute (which includes the vast majority of motor sports).

5. Flyback mode

The flyback was originally developed in the 1930s for airplane pilots, to allow accurate timing of flight paths from waypoint to waypoint. It was found that the time to stop, reset, and restart a chronograph took so long that errors in navigation would result, which would be compounded as these accumulated over the course of a journey with multiple legs. The flyback allowed this to be done simultaneously: stop, reset and restart in a single press on the reset pusher. Combining the new flyback function with the other timing modes of the Sequential calibre offers even more functionality. For example, a pilot can keep track of overall flight time on one chronograph, while using the other chronograph to accurately time each leg with the flyback function.

Legacy Machine Sequential Flyback

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Powering such an engine
The design of the LM Sequential is completely unique. It encompasses two independent chronographs within a single movement, both of which are linked to a common escapement and oscillator. The energy losses associated with a conventional chronograph are well known, so imagine what can happen with two chronographs in a single movement? The losses would be doubled, resulting in unacceptably poor performance. All this functionality within a single watch required the invention of a fundamentally new type of chronograph system, one which would not be susceptible to any sort of energy losses.

This is exactly what the LM Sequential does, thanks to the use of its innovative internally-jewelled vertical clutches and their associated control system. The new flyback mechanisms also incorporate jewelled rollers. Thanks to these patented solutions, the Sequential calibre outperforms conventional chronographs in terms of energy efficiency and precision.

For the history buffs
The word chronograph has Greek etymological roots. The first part comes from χρόνος (chrónos), meaning time, as seen in words such as chronology and chronicle. The second part is derived from γράφω (gráphō), meaning to write, to make a written record of something. Just as a phonograph describes a system of recorded sound and a photograph is recorded light, a chronograph gives us recorded time. In the early 19th century, chronographs were associated with horseracing, developed according to the necessity to precisely determine the timing results of such a fast-paced sport. These early chronographs used droplets of ink to mark timings on dials even as they continued to run, allowing specific timings to be preserved for the record (at least until the chronograph was stopped and the dial wiped clean for the next race).

In the early days of motor racing, a timing system was used whereby multiple chronograph pocket watches were mounted on a frame, and a “combined operating lever” allowed all of the watches to be actuated simultaneously. However, there were inherent inaccuracies in this approach, as the multiple watches would often run at slightly different rates. Moreover, such a cumbersome arrangement could clearly never be worn on the wrist.

When Maximilian Büsser spoke to Stephen McDonnell in 2016, raising the possibility of a follow-up to Legacy Machine Perpetual (2015), the response from Stephen was four words long: “I have an idea.” It was a response as cryptic as it was exciting, particularly if you knew the kind of ideas that came from the mind of Stephen McDonnell. That conversation with Max accelerated a train of thought that Stephen had been mulling over for some time — that most modern chronographs were unable to adequately perform the job they had been designed for.

The combined operating lever immediately suggested itself to him as a way to ensure that sequential race events could be measured with maximum precision with a manually operated mechanical chronograph. The provision of two independent chronograph systems which could be actuated together simultaneously meant that different timings could be taken and preserved long enough for the results to be recorded. The key would be to find a way to pack all of this functionality into a single wristwatch…

From then on, the various solutions fell into place. Using two separate chronograph mechanisms linked to the same oscillator — an idea practically made for the Legacy Machine, with its central flying balance wheel — meant that timing errors due to tiny chronometric discrepancies between different timers would be eliminated.

Stephen McDonnell continued to refine his vision of the ideal chronograph, reconfiguring the chronograph vertical clutch to sit within the main gear train in order to eliminate the infamous flutter of the chronograph seconds hand without the need for an amplitude-draining friction spring. He incorporated internally jewelled chronograph clutch shafts that would make amplitude fluctuation between the active and inactive modes of the chronograph a thing of the past.

The crowning touch to Stephen McDonnell’s ideal chronograph, augmenting the role played by the combined operating lever found in historical chronograph systems, is the Twinverter concept. The ability to toggle instantly between chronograph operating modes directly opens up this age-old complication to be used in a variety of situations in modern daily life. It is the programming logic gate of mechanical watchmaking, a system that could have been devised only by the creator of the mechanical processor at the heart of Legacy Machine Perpetual.

Legacy Machine Sequential Flyback

LM Sequential Flyback

Dream-maker meets watchmaker: more about Max and Stephen
Those who know the story of MB&F will know that Northern Ireland watchmaker Stephen McDonnell is counted among the key figures who brought the first creations of Max Büsser into the world. He was one of the handful of watchmakers who assembled the first few movements for what would become Horological Machine N°1.

A decade later, Stephen McDonnell re-entered the world of MB&F to develop the Legacy Machine Perpetual: a ground-breaking approach to one of the most prestigious traditional high complications, the perpetual calendar. His philosophy of watchmaking is directly complementary to that of Max, taking a blue-sky approach to practical horology, compared to Max's way of turning space-age fantasies into wrist-worn realities.

They both have a knack for answering questions that most of us never even realised we were asking. It is conceivable that in a parallel universe, one where the LM Sequential Twinverter could be used on people, it would link Max and Stephen even further as watchmaking inverses of each other.

As MB&F enters the last stretch of its second decade, it is appropriate that someone who helped the brand come to life is instrumental in bringing it to a new level of horological legitimacy. The LM Sequential is more than a recorder of time. It is a recorder of history — between Maximilian Büsser, the brand he created, and the watchmaker who was there from the beginning.

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LM Sequential Flyback

Technical specifications

Legacy Machine Sequential Flyback launches in a platinum edition with sky blue dial plate limited to 33 pieces.

Engine
Fully integrated dual chronograph flyback system developed for MB&F by Stephen McDonnell, featuring Twinverter switch allowing multiple timing modes.
Manual winding with double mainspring.
72 hours (3 days) power reserve.
Flying balance wheel with regulating screws at 12 o’clock, Breguet overcoil.
Superlative hand finishing; internal bevel angles highlighting handcraft; polished bevels; Geneva waves; hand-made engravings, darkened bridges (NAC finish).
White lacquered inclined dials.
Balance frequency: 3Hz (21,600 vph).
Number of components: 619.
Number of jewels: 63.

Functions
Time display (hours/minutes) at 6 o’clock.
Left chronograph : seconds displayed at 9 o’clock and minutes at 11 o’clock; start/stop pusher at 10 o’clock and reset/flyback at 8 o’clock.
Right chronograph : seconds displayed at 3 o’clock and minutes at 1 o’clock; start/stop pusher at 2 o’clock and reset/flyback at 4 o’clock.
Twinverter pusher at 9 o’clock: binary switch that inverts the current start/stop status of both chronographs.
Both chronographs are equipped with a flyback.
Power reserve indication at the back of the movement.

Case
Material: platinum.
Dimensions : diameter 44mm x height 18.2mm.
Number of components : 88.
Water resistance : 30m / 3ATM / 90 feet.
Screw down crown.
Sapphire crystals on top and display back treated with anti-reflective coating on both faces.

Strap & buckle
Alligator strap with white gold folding buckle.

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LM Sequential Flyback

‘Friends’ responsible for Legacy Machine Sequential Flyback

Concept: Maximilian Büsser / MB&F
Product design: Eric Giroud
Technical and production management: Serge Kriknoff / MB&F
Movement design and finish specifications: Stephen McDonnell and MB&F
Movement development: Stephen McDonnell, MB&F
R&D: Pierre-Alexandre Gamet and Robin Cotrel / MB&F
Methods and laboratory: Maël Mendel, Anthony Mugnier and Yannick Journoud / MB&F

Wheels, bridges, pinions and axis: Jean-François Mojon / Chronode, Paul-André Tendon / Bandi, Daniel Gumy / Decobar Swiss, Rodrigue Baume / HorloFab, Benjamin Signoud / AMECAP, Marc Bolis / 2B8, Le Temps Retrouvé, D-Cojoux and Roud’Hor SA
Balance wheel: Sébastien Jeanneret / Atokalpa
Springs and jumpers: Alain Pellet / Elefil Swiss
Barrel: Stefan Schwab / Schwab-Feller
Rubies: Pierhor / Crelier
Hand-engraving of movement: Glypto
FlexRing: Laser Automation
Hand-finishing of movement components: Jacques-Adrien Rochat and Denis Garcia / C-L Rochat, Florent Bolis / DSMI Electronics SA, CV Décor, MBG Watch Décor, Stéphane Greco / Rhodior SA
PVD/CVD-treatment: Pierre-Albert Steinmann / Positive Coating
Movement assembly: Didier Dumas, Georges Veisy, Anne Guiter, Emmanuel Maitre, Henri Porteboeuf, Mathieu Lecoultre, Amandine Bascoul and Loïc Robert-Nicoud / MB&F
Case and movements components: Alain Lemarchand, Jean-Baptiste Prétot, Yoann Joyard, Stéphanie Cavalho and Arsène Phouthone/ MB&F
After-sales service: Antony Moreno / MB&F
Quality control: Cyril Fallet and Jennifer Longuepez / MB&F
Case decoration: Termin’Hor
Dial and Super-LumiNova on the dials: Billight SA
Buckle: G&F Chatelain
Crown and correctors: Boninchi
Hands: Waeber HMS
Sapphire crystals: Novocristal
Anti-refection treatment for sapphire crystals: Anthony Schwab / Econorm
Strap: Jean Rousseau
Presentation box: Olivier Berthon / Soixanteetonze
Production logistics: Ashley Moussier, Thibaut Joannard, David Gavotte, Jean-Luc Ruel, Caroline Ouvrard, Maryline Leveque and Emilie Burnier / MB&F

Marketing & Communication: Charris Yadigaroglou, Vanessa André, Arnaud Légeret, Paul Gay and Talya Lakin / MB&F
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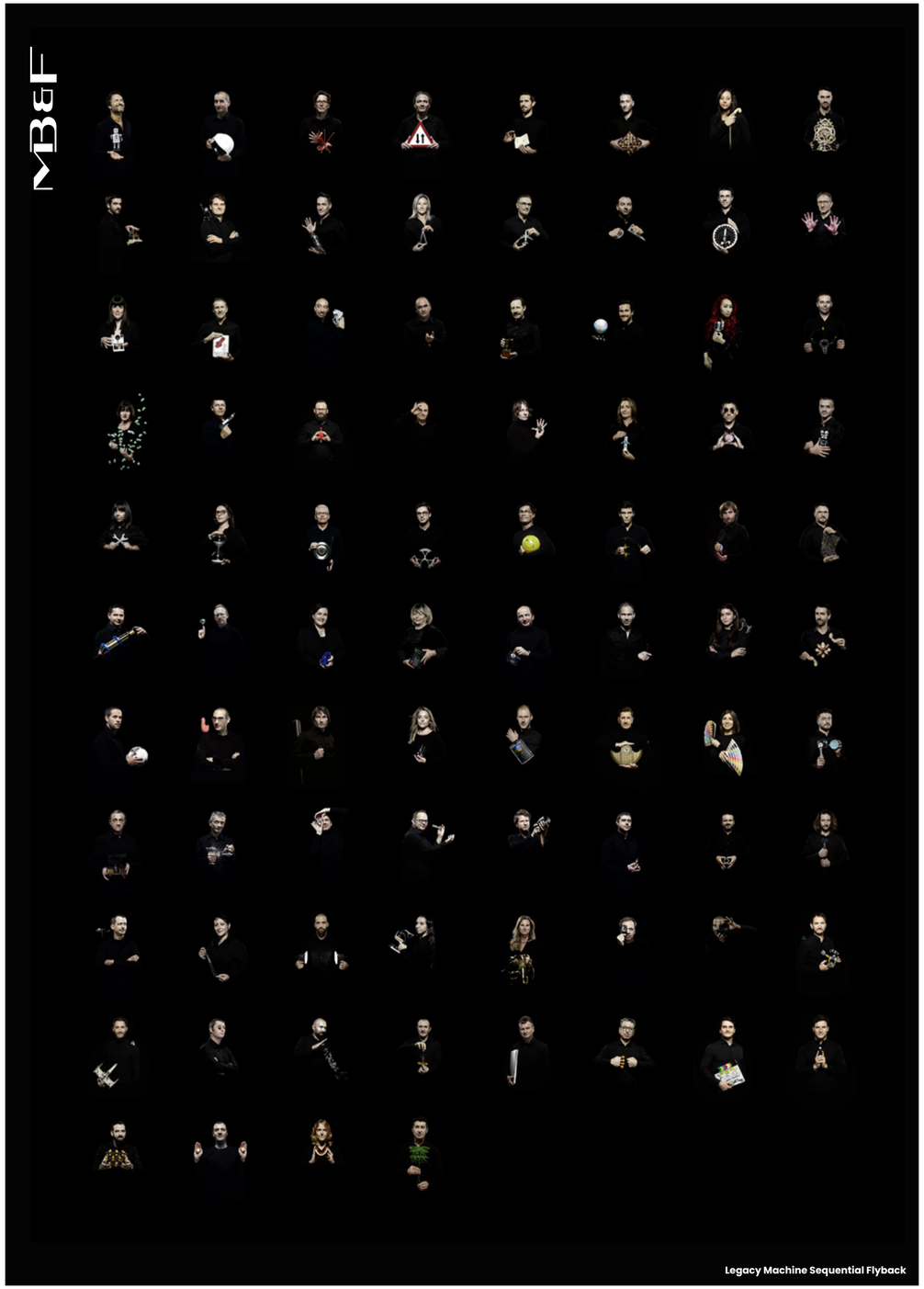

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LM Sequential Flyback

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MB&F – Genesis of a concept laboratory

Founded in 2005, MB&F is the world’s first-ever horological concept laboratory. With over 20 remarkable calibres forming the base of the critically acclaimed Horological and Legacy Machines, MB&F is continuing to follow Founder and Creative Director Maximilian Büsser’s vision of creating 3-D kinetic art by deconstructing traditional watchmaking.

After 15 years managing prestigious watch brands, Maximilian Büsser resigned from his Managing Director position at Harry Winston in 2005 to create MB&F – Maximilian Büsser & Friends. MB&F is an artistic and micro-engineering laboratory dedicated to designing and crafting small series of radical concept watches by bringing together talented horological professionals that Büsser both respects and enjoys working with.

In 2007, MB&F unveiled its first Horological Machine, HM1. HM1’s sculptured, three-dimensional case and beautifully finished engine (movement) set the standard for the idiosyncratic Horological Machines that have followed – all Machines that tell the time, rather than Machines to tell the time. The fiercely unconventional Horological Machines have explored themes as diverse as space and science fiction, aviation, supercars, the animal kingdom and architecture.

In 2011, MB&F launched its round-cased Legacy Machine collection. These more classical pieces – classical for MB&F, that is – pay tribute to nineteenth-century watchmaking excellence by reinterpreting complications from the great horological innovators of yesteryear to create contemporary objets d’art. Certain Legacy Machines have also given birth to EVO editions, featuring increased water and shock resistance compatible with collectors’ active lifestyles. MB&F generally alternates between launching contemporary, resolutely unconventional Horological Machines and historically inspired Legacy Machines.

As the F stands for Friends, it was only natural for MB&F to develop collaborations with artists, watchmakers, designers and manufacturers they admire.

This brought about two new categories: Performance Art and Co-creations. While Performance Art pieces are MB&F machines revisited by external creative talent, Co-creations are not wristwatches but other types of machines, engineered and crafted by unique Swiss Manufactures from MB&F ideas and designs. Many of these Co-creations, such as the clocks created with L’Epée 1839, tell the time while collaborations with Reuge and Caran d’Ache generated other forms of mechanical art.

To give all these machines an appropriate platform, Büsser had the idea of placing them in an art gallery alongside various forms of mechanical art created by other artists, rather than in a traditional storefront. This brought about the creation of the first MB&F M.A.D.Gallery (M.A.D. stands for Mechanical Art Devices) in Geneva, which would later be joined by the M.A.D.Gallery in Dubai – along with MB&F Labs, which showcase a more compact selection of artists in locations like Singapore, Taipei, Paris and Beverly Hills.

There have been distinguished accolades reminding us of the innovative nature of MB&F’s journey so far. To name a few, there have been no less than 9 awards from the famous Grand Prix d’Horlogerie de Genève, including the ultimate prize: the “Aiguille d’Or”, which rewards the best watch of the year. In 2022, the LM Sequential EVO was awarded the Aiguille d’Or, while the M.A.D.1 RED won the ‘Challenge’ category. In 2021, LMX won the Best Men’s Complication and the LM SE Eddy Jaquet ‘Around The World in Eighty Days’ was awarded in the ‘Artistic Crafts’ category. In 2019, the prize for Best Ladies Complication went to the LM FlyingT; in 2016, LM Perpetual won the Best Calendar Watch award; in 2012, Legacy Machine No.1 was awarded both the Public Prize (voted for by horology fans) and the Best Men’s Watch Prize (voted for by the professional jury). In 2010, MB&F won Best Concept and Design Watch for the HM4 Thunderbolt. In 2015 MB&F received a Red Dot: Best of the Best award – the top prize at the international Red Dot Awards – for the HM6 Space Pirate.

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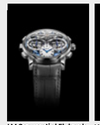
The machine


LM Sequential Flyback Platinum Face


LM Sequential Flyback Platinum Front


LM Sequential Flyback Platinum


LM Sequential Flyback Platinum Back


LM Sequential Flyback Platinum Face

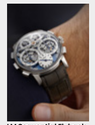

LM Sequential Flyback Platinum Face

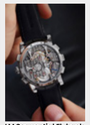
Lifestyle

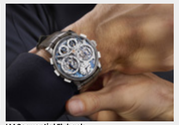

LM Sequential Flyback Platinum Lifestyle


LM Sequential Flyback Platinum Lifestyle


LM Sequential Flyback Platinum Close-up


LM Sequential Flyback Platinum Wristshot


LM Sequential Flyback Platinum Wristshot

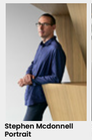

LM Sequential Flyback Platinum Wristshot

Maximilian Büsser


Maximilian Büsser Portrait


Maximilian Büsser Portrait

The Friends


Stephen Mcdonnell Portrait


Stephen Mcdonnell Portrait


Friends Portrait


Friends Landscape

Film


LM Sequential Flyback movie

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