

# TECHNICAL SPECIFICATIONS OF THE RICHARD MILLE CALIBER RM 011 Felipe Massa Flyback Chronograph

**CALIBER RM 011-S:** Skeletonized automatic winding movement with adjustable rotor geometry offering hours, minutes, seconds, chronograph, 60-minute countdown timer, 12-hour totalizer, oversize date, month.

**Dimensions:** Length 50 mm x 40 mm (widest point) x 16.15 mm (thickest area).

## MAIN FEATURES

(MANY OF WHICH ARE MAJOR TECHNICAL INNOVATIONS)

### FLYBACK CHRONOGRAPH

By using the pusher between 4 and 5 o'clock, the running chronograph can be reset without first having to stop the mechanism. This was originally developed for pilots, in order not to lose time (and therefore accuracy) from stopping, resetting and starting the chronograph whilst traversing a navigational point.

**Running operation:** The user can start or stop the chronograph function via the pusher located between 1 and 2 o'clock. The Flyback Function can be continuously reset at will by depressing the second pusher located between 4 and 5 o'clock.

**Stopping:** Use the start/stop pusher between 1 and 2 o'clock to stop the chronograph, then depress the reset/flyback pusher once.

### ANNUAL CALENDAR

Automatic adjustment for months of 30 or 31 days.

### OVERSIZE DATE DISPLAY

Semi-instantaneous, placed in a red outlined horizontal aperture under 12 o'clock.

### MONTH DISPLAY

Semi-instantaneous indicate with Arabic numerals, placed between 4 and 5 o'clock.

### ROTOR WITH VARIABLE GEOMETRY

Arm in grade 2 titanium  
Flange in grade 2 titanium  
6-positional adjustment via grade 5 titanium screws  
Wings in 18-carat, high palladium content white gold  
Weight segment in tungsten/cobalt alloy  
Ceramic ball bearings  
Unidirectional; anti-clockwise winding direction

This exclusive RICHARD MILLE design allows the rewinding of the mainspring to be adapted most effectively to the user's activity level whether it be sporting or non-sporting environments. By adjusting the setting of the rib's placement, the rotor's inertia is modified to either speed up the winding process in the case of leisurely arm movements, or slow it down when sporting activities are pursued. As a result, this invention allows the movement's winding mechanism to be optimized and personalized to the owner's lifestyle.

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## CALIBER RM 011-S

### **POWER RESERVE**

Circa 50 hours, 45h with chronograph running.

Actual power reserve results will depend on the period of time the chronograph is utilized.

### **WATCHCASE**

This was the subject of an entire year of research and development. With regard to the production of each case, 68 different stamping operations are required for the three main components (bezel, middle section and case back). The machine tooling process requires 8 days of adjusting the machines for the bezel, 5 days for the middle section and 5 days for the case back.

Prior to this process, developing a methodology for carrying out this series of operations took 120 hours, the drawings for the tools 130 hours, and implementation 180 hours.

Each rough case involves 202 separate machining operations.

The design and execution of the watch demonstrates a complete conceptual approach to the movement, case and dial. As a result, everything has been constructed according to an extremely rigorous specification, in the manner of the analytical engineering methods used in the design of Formula 1 racing cars where the chassis and the engine are developed in complete harmony.

For example, a casing ring is no longer used and the movement is mounted on chassis mounting rubbers (ISO SW) fixed by 4 titanium screws. Features such as these are evidence of uncompromising workmanship.

The tripartite case is water resistant to 50 meters, ensured by three Nitril O-ring seals.

The case is assembled with 16 spline screws in grade 5 titanium and abrasion resistant washers in copper-nickel-zinc alloy.

### **BOTTOM PLATE, BRIDGES AND BALANCE COCK MADE OF TITANIUM**

The manufacture of these components in grade 2 titanium with black PVD coating allows the whole assembly to be given great rigidity, as well as precise surface flatness which is essential for the perfect functioning of the gear train.

### **DOUBLE BARREL SYSTEM**

The double barrel system helps to improve the torque stability over a longer period.

This is achieved by using more rotational turns, thereby reducing pressure and friction on the teeth, the bearings and the pivots, resulting in improved long-term performance.

### **INTERIOR FLANGE** (upper and lower)

In carbon fiber; index points filled with approved luminous material.

### **SPLINE SCREWS IN GRADE 5 TITANIUM FOR THE BRIDGES AND CASE**

This permits better control of the torque applied to the screws during assembly. These screws are therefore unaffected by physical manipulation during assembly or disassembly and age well.

### **CROWN**

In grade 5 titanium, with double seal O-ring and collar in Alcryn.

### **DIAL**

In sapphire (thickness: 0.40 mm) with anti-glare treatment (2 sides), protected by 8 silicon braces inserted in the upper and lower grooves.

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## CALIBER RM 011-S

### CRYSTAL

Bezel side: in sapphire (1800 Vickers) with anti-glare treatment (2 sides).  
Thickness: 1.20 mm  
Case back: in sapphire with anti-glare treatment (2 sides)  
Thickness: at the center 1 mm and outer edges 1.73 mm

### OTHER FEATURES

Dimensions of movement: 30.30 mm x 32.75 mm x 9.00 mm  
Thickness: 6.35 mm  
Number of jewels: 62  
Barrel arbor - in AP 20 steel  
Balance: GLUCYDUR, 3 arms, inertia moment 4.8 mg cm<sup>2</sup>, angle of lift 53°  
Frequency: 28,800 vph (4 Hz)  
Balance spring: ELINVAR NIVAROX  
Index assembly: Triovis N°2  
Shock protection: INCABLOC 908.22.211.100 (transparent)  
Escapement wheel jewels: Rubifix (transparent)  
Stem with three positions: manual winding, date, hand setting

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### FINISHING

#### MOVEMENT

- Bottom plate and bridges in hand-ground titanium, wet sandblasted, PVD treated
- Anglage and polishing by hand
- Locking sections hand polished
- Burnished pivots
- Diamond polished sinks on the bridge side
- Pinions with undercuts
- Sandblasted and rhodium-plated, beveled wheels

#### STEEL PARTS

- Sapphire blasted surfaces
- Anglage and polishing by hand
- Screw slot and screws beveled and polished with rounded and polished tip.