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# REVOLUTION

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## BASELWORLD 2014

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# BREVA

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## GENIÉ 01

**MOVEMENT** Exclusive manual-winding movement by Jean-François Mojon/Chronode; hours and minutes; small seconds; altitude indicator; barometric-pressure indicator; air-pressure equalizer; equalizer-seal indicator; barometric-scale adjuster; altitude-scale adjuster; power-reserve indicator; 65-hour power reserve

**CASE** 44.7mm; 4N pink gold or white gold; water-resistant to 30m

**STRAP** Alligator leather

Breva was founded by Vincent Dupontreué, a still-young (he was born in 1977) entrepreneur who successfully ran his own men's-style company for seven years before taking a break from business to earn an MBA. The firm got its start in 2010 when a trip to Lake Como in Italy inspired Dupontreué to name his new company after "*La Breva*" — the local name around Lake Como for a warm, steady wind that blows during spring and summer and is often the harbinger of fair weather. And it wasn't just the name that the weather inspired — it was also the design and functions of the watches.

Breva's two debut watch models — the Genié 01 and Genié 02 — are timepieces that feature high-precision altimeters and barometers. The technical development of the watches is a result of collaboration with Jean-François Mojon, of Chronode SA in Le Locle (whom many enthusiasts will remember as the designer of the Harry Winston Opus X).

The two functions are linked — while there are a number of different methods for determining altitude, the one used by Breva in its watches is measurement of air pressure, which decreases with altitude. Changes in air pressure can be measured with a barometer, which can also be used to predict short-term changes in weather (a decrease in air pressure often heralds a storm, while rising pressure is associated with good weather). The Italian scientist Evangelista Torricelli first developed the barometer in 1643; he deduced that the atmosphere must have weight and exert pressure after observing the behavior of water in very tall siphons. Torricelli's was not only the first barometer; he was also the first to use mercury in a column to measure atmospheric pressure (traditionally given as millimeters of mercury).

Mercury barometers were — and still are — very accurate, but they were fragile and, of course, also highly toxic. The Breva watches, therefore, use a type of barometer known as an aneroid barometer, which was first developed in 1844 by the French scientist, Lucien Vidie. The aneroid barometer uses, instead of a column of mercury, a capsule made of a beryllium copper alloy from which most of the air has been evacuated (aneroid means "without air"). The capsule expands or contracts as external air pressure changes. Often, multiple capsules are used to amplify the mechanical distortion achieved, and improve precision; the Breva watches use a double-capsule system, and we're also told that a special shape-memory metal alloy was developed (and is patented by Breva) to optimize performance in a wristwatch. The tip of a lever rests on the capsule(s) and is deflected as air pressure changes, and the deflection is amplified by a gear train. This mechanism bears certain similarities to those used in mechanical-depth-gauge watches.

Breva's barometer watches face the same problem, as do mechanical-depth-gauge watches — in order for the barometer to work, the case has to be open to the external environment. In the current generation of mechanical dive watches, this is addressed by

## GENIÉ 02

**MOVEMENT** Exclusive manual-winding movement by Jean-François Mojon/Chronode; hours and minutes; small seconds; large-scale altitude indicator; precision-scale altitude indicator; air-pressure valve; equalizer-seal indicator; altitude-scale adjuster; power-reserve indicator; 65-hour power reserve

**CASE** 44.7mm; titanium (Terre model) or black titanium G5 (Air model); water-resistant to 30m

**STRAP** Natural rubber

placing the metal diaphragm on the outside of the case; in the Breva watches, air passes in and out of the case interior through a specially made Teflon filter which allows the ingress and egress of air, but not moisture or dust.

The Genié 01 shows altitude on a 1–5,000m scale in a sector at the upper left-hand side of the dial. The weather prediction dial is on the lower right. Using the watch is fairly straightforward. First, one opens the valve (located at four o'clock) to equalize air pressure inside the case with the outside. (The valve is opened by pressing the pusher to read barometric pressure — essentially, the watch measures pressure "on demand".) One then sets the barometer dial, which is moveable, so that the hand rests on "*Meteo*" (French for "weather forecast"). Over the next few hours, if the air pressure rises, the hand will move to the right to indicate fair weather; if the pressure drops, the hand moves to the left, indicating foul weather. Crucially, the barometer dial can be corrected for changes in altitude (which might give incorrect weather readings), thanks to a scale on the back of the case, which shows the correction in hectopascals (hPa) — a standard international unit of air pressure — for varying altitudes. The altimeter can also be manually calibrated — both the altimeter and weather dial can be set using the combined crown-and-pusher at two o'clock (the crown for the weather dial, and the pusher for the altimeter).

The Genié 02 is a pure high-precision altimeter — like the Genié 01, its altimeter is accurate to 5,000m. However, instead of a weather dial, it sports a high-precision subdial for altimetric measurement. It comes in two versions — the "Terre" in titanium, with the subdial showing increments of 1,000m; and the "Air", which is in black titanium and has the IATA (International Air Transport Association) codes for 20 major airports on the caseback along with their altitudes. As with Genié 01, the altimeter can be calibrated using the adjuster at two o'clock.

The barometers used in Breva's watches were engineered by Michel Dourde, whose family has been making barometers for four generations, since 1860. The maximum change in height of the aneroid capsules is only 0.2mm, and the gear system has to magnify this by about 200 times in order to make the change visible and legible to the naked eye.

These are remarkable instruments, and Breva has accomplished something very difficult in producing them; they've made highly complicated wrist instruments that are also compellingly beautiful, and with a very rare complication to boot. There have been very, very few barometric and/or altitude-measuring watches that are purely mechanical (the Favre-Leuba Bivouac altimeter watch from the 1960s being one of this very small group).

We're not sure where Breva's going next, but in the meantime, hats off to them for a remarkable achievement, and for giving us one of the most intriguing debuts we've seen in years. ★