

Hidden Lights

Ulysse Nardin's Sonata is the latest creation to be unveiled under the aegis of Rolf Schnyder. Like the Freak, it breaks conventions; unlike the Freak, its secrets are hidden within

Theodore Diehl

The idea of the alarm wristwatch is nothing new. At the end of the 1960s, alarm watches enjoyed a relatively short period of popularity and several brands released versions with various ingenious mechanical designs. While featuring clever solutions, the watches produced by such companies as Omega, Vulcain and Lemania were not always easy to use, and produced a variety of more or less sonorous buzzing noises when their alarms went off. Ulysse Nardin's Sonata incorporates a much more complete solution, not least due to its ease of use and the sonority of its alarm.





Back and forth

Ulysse Nardin began developing the Sonata seven years ago at a time when their young watchmakers, designers and engineers also began to absorb the Ulysse Nardin philosophy, then being laid down under the watchful eyes of Dr Ludwig Oechslin. He invariably demanded that all the watches produced by Ulysse Nardin should be as user friendly as possible at any cost. Although the term 'user friendliness' is a logical expectation in an expensive luxury item, the reality is that it is a difficult principle to achieve and is often ignored.

As Pierre Gygax, vice-president of Ulysse Nardin, explains: "Complicated watches do not like to be turned backwards and forwards very much, certainly not near midnight when many indicators change their positions, simply because all the parts are communicating with one another. For example, in the Sonata, when you adjust the hours and minutes, the date, countdown timer, time zone and alarm settings must all follow without a hitch. What happens if, for instance, you are travelling to New York and have set the alarm in order to remind yourself to call someone 10 hours from your departure? On arrival, you will reset the time for the new time zone. In the Sonata, you can turn backwards and



The upper layer of the movement (just below the dial), showing the countdown timer (left) and the alarm (right).

forwards, even through midnight, and all the settings will follow. Every other alarm watch on the market require you to go only forward, and because of that you must reset the date, which means you are busy for 30 minutes re-checking everything. These types of things are nightmarish for a movement designer to solve. The young engineers who had to work out the practical production of Ludwig's ideas sometimes went crazy examining these seemingly simple problems. But they had learned and accepted his ideas for making a successful horological product, and so they stuck at it to achieve these results. In the Sonata, these new developments must be heard and experienced."

Ulysse Nardin was of course able to build upon the expertise collected during the development of the GMT perpetual models, in which all functions are adjusted with total freedom through one crown. The key solution in the Sonata was the extensive use of small differentials, or small gears within gears, that allow all of the functions to communicate interactively. Due to the large number of functions and the constraints on the movement's total practical height, many of the 101 jewels in the Sonata function as 'guide' jewels, ensuring smooth movement as well as true flat engagement of the gears involved.



The second layer of the movement, exposing the pushers and a microscopic satellite wheel (almost spot centre in this picture) that is the key component of the differential's 'backwards and forwards' functionality.

The right-hand crown has three positions:

1. For winding; forwards winds the movement, backwards the alarm system
2. Time setting
3. Alarm setting

The left crown is for adjusting the date and on either side under both crowns' shoulders there are harmoniously shaped push buttons for adjusting the time zone backwards and forwards. Even the alarm's countdown timer will adjust automatically with the GMT function when it is altered.

The gong

The use of a gong to produce sounds marking the passage of time has been used for centuries in repeater watches. The gong itself (which in the repeater is a small, solid, steel rod of miniscule proportions that follows the same shape as the watchcase interior) produces a tone when gently struck, just as its greater orchestral relatives do. Therefore, a repeater watch will also have to contain small metal hammers attached to a mechanism that makes them strike the required number of times, much in the same way as felt-covered hammers in a piano strike their corresponding strings. It is a delicate and highly complicated mechanism representing the apoth-



Back view of the movement. Note the depth of the movement and the circular-shaped Geneva stripes. The Ulysse Nardin logo, displayed on their first in-house movement manufactured in La Chaux-de-Fonds, is proudly visible.

ecosis of the watchmaker's art and ability. The required effort is not in vain, for the sound such a mechanism produces is clear, transparent and just a little unearthly.

Making such a mechanism function in a fool-proof manner amid the rigours of daily life is clearly a difficult challenge; to recreate this unique sound in every single watch produced for the market is harder still. (Minute repeaters are inordinately expensive, therefore watch manufacturers only produce several pieces per year; the Sonata's clientele will be much larger.) Much can go wrong just with the production of the actual gong itself. The alloys used are rare and difficult to find, and the problems that must be overcome during the fabrication process are identical to those of musical instrument makers who must recreate the same tonal quality in each instrument. Not only must the gong have the right pitch but it must also be able to hold a specific shape without deforming and touching the case.

Another barrier to consistency is the fact that the sonority or sound colour, as well as the volume produced, will be affected by the method of attachment to the movement (and even the material used for the watch case itself).



The solution for guaranteeing the production of a perfect musical note from every watch is shrouded in secrecy.



(Top) The main UN headquarters and factory in Le Locle, Switzerland

(Left) The Sonata's gong is made from a continuous piece of steel via a unique, secret process. On the right is a view of the metal bar after it has been extracted and treated several times to achieve the correct gong thickness. On the left, the round section has been partially flattened in preparation for drilling and grinding to form the block that will be used to attach the gong to the movement baseplate. After this comes bending and 'baking' to achieve a stable shape.

In standard practice, the gong is tapered and then soldered into a tiny holding block before being finally attached to the movement. This block, with the gong attached, is then screwed to the movement's baseplate. To adjust pitch and colour, the gong is later filed down to a triangular-shaped cross-section just in front of where it is soldered. Even in this overview, you can already sense there are a lot of problem areas in getting everything to fit together properly. The task seems even greater when you realise that we are discussing mere fractions of millimetres, and then only the actual gong itself; making the hammers strike at the right time and with the right force is more complex still!

Perfect pitch

The solution for producing the right sound each and every time – ie, guaranteeing the production of a perfect musical note from every watch – is shrouded in secrecy. (The same secrecy regarding production techniques and alloy information is also demanded by many manufacturers of cymbals, gongs, bells and other percussion instruments used in the music world.) To solve this problem, Ulysse Nardin turned to Denis Jeandupeux and Jean-François Erard, both based in La Chaux-de-Fonds, a renowned and centuries-old centre of such



The completed Sonata gong, ready to rouse you from your daydreams!

"horomusical" expertise. These two owners of small, specialist watch-part firms conceptualised the solution during an evening-long brainstorming session that involved a crate of beer! They solved an industry-wide problem, and enjoy resounding recognition for their work within the Swiss watch world. Their method quantified problems of alloys, sonority and constant production quality in one fell swoop. Now they supply the entire Swiss industry with gongs of sonority equivalent to or better than the original gongs of 100 years ago. Via a series of stepped procedures, their process enables the production of gong and block in one piece, starting with a staff of special steel and ending with the perfect shape and with the desired sonority as well.

As dry as it might seem, this is the equivalent of squaring the circle, and although I was allowed to see some of the steps involved, the procedure itself is absolutely off-limits. In fact, even the little amount of information you are reading here has never been made public before, and the people at Ulysse Nardin were amazed to learn that *QP* had been allowed to look around their production facility at all! ●

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