

## Omega Constellation – Movements Part Two

In this, the second of four articles on Omega Constellation movements, the early 500 series is reviewed. In the next article, article three, the mid- 500 calibres 551, 561, 564 along with first cousin the 751 are put under the spotlight, and, finally, in article four the 1000 series will be explored. The mid 500s are said to be “the finest production movements ever made” and this mantra has been repeated so often that it is a self-evident and rarely questioned truth in collecting circles. This is put to the test in article three by some contrastive analysis between other models of the period and mid-500 calibre and 1000 series calibre movements.

It is useful at this stage to make a distinction between production movements and the high-end, labour intensive movements of houses like Patek Philippe and others. The 500 series were mass-produced in-house on what was a high-tech production line. This is not to say that human hands never touched the manufacturing process. On the contrary, there was human intervention in many steps of the manufacturing and assembly chain.

Thanks to the ingenuity of Omega technocrats such as Technical Manager, Henri Gerber, significant improvements were made to production methods over time that allowed Societe Suisse pour l'Industrie Horlogere, the Omega holding company, to produce movements of a quality and design that matched or bettered the performance and durability of most high-end watches on the market.

As with Rolex, Omega's main rival in the mass-produced luxury watch market, Omega in the 1950s and 60s occupied the top of the middle-end segment of the market, in the level immediately below top-shelf brands such as Vacheron & Constantin, Patek Philippe, Audemars Piguet and other haute horlogerie notables.

The Omega company was internationally renowned as a 'high value' watch company, producing exceptionally well-made pieces that offered value, accuracy and dependability. It's true to say that underpinning Omega's market positioning was a solid commitment to old-fashioned notions of quality and artistry as opposed to producing watches to a price. Omega was a prestigious enough brand to be given to presidents and its product robust enough to be chosen by NASA to adorn the wrists of its astronauts. It was comparatively expensive to buy an Omega watch in the 1950s and 60s. As many collectors edging towards their 60s will now attest, owning a gold Omega Constellation was a dream beyond the means of most family men at the time, despite the price of gold being pegged at US 35.00 an ounce!



Omega calibre 471 from a Seamaster. Notice the absence of Swan Neck regulator and presence of redundant regulating screws on the balance wheel.

The brand reached its high point in the late 1960s. During and after the Swiss meltdown in the 1970s, Omega's reputation for quality suffered. It lost a measure of status that to this day remains elusive, notwithstanding a brand recognition factor of 70% in developed countries. But, in the heyday of the Constellation, Omega was one of the great super-brands of the Swiss mechanical watch era.

### The Evolution of the 500 Series

The first bi-directional rotor automatic for men's Omegas was the calibre 470 series produced from 1955 onwards. Initially carrying 17 jewels, the movement was modified to 19 and then 20 jewels in calibre 471, which in a number of guises went on to replace all 300 series bumper movements.



Diagram of the power system of a Calibre 501

The Constellation calibre 501 is a synthesis of the technical lessons learned from the smaller calibre 471 and the larger 'swan-necked' regulator calibre 490. A centre seconds feature was added to the 490 and it became what we know as the early 500 series.

The early 500s are an attractive movement, quite simple in design but incorporating a few well thought-out Omega initiatives like the indirect centre-seconds configuration that operated independently from the power stream and thus did not require to be jewelled.

The movements featured a straight-line lever escapement releasing energy at 19,800 beats per minute, which, at the time was considered a fast-beat movement while today it would attract the opposite description. It had a monometallic balance, self-compensating flat balance spring, and the famous swan-neck micrometer regulator that manipulated the balance spring to achieve high degrees of accuracy relative to the times.

The two-armed balance was made mainly from beryllium to which copper and iron were added to enhance its robustness and ability to maintain its shape and retain its anti-magnetic qualities. Commonly termed a 'glucydur balance', its production cost was over four times the expense of a traditional balance largely because of the 17 additional manufacturing steps required to produce it.

The combination of 'glucydur' balances and nivarox hair springs (made from an alloy of iron, nickel, beryllium, titanium and silicon) allowed for optimal temperature stability and anti-magnetic qualities and also countered the problems of oxidisation of surfaces.

The balance regulation screws appear to have been added for reasons of aesthetics or tradition because the advent of mono-metallic balances did away with the need for regulating screws.

The early 500 series was manufactured to a standard of engineering and finish only seen in the top-end of today's market. Cosmetic and functional finishing of the movements was excellent. A combination of sun grinding, snailing and high polish together with anglaged/rounded edges produced an extremely attractive cosmetic effect. As with earlier Omega movements, the 500 series featured copper plating over most of the beryllium bronze alloy parts. The plating



## OMEGA *Constellation*

CALIBRE 28 SC - 501 - 19 RUBIS

Chaque chronomètre Automatic Rotor a obtenu le bulletin officiel de marche «Résultats particulièrement bons». Il est livré dans un très bel étui pleine peau.

Étanche avec glace armée fond à pression, joint «0»

was often mistaken for Rose Gold, owing in part to the liberty taken by Omega in describing it as such in some promotional campaigns.

Add to that the meticulous attention to finishing of the working (or functional) surfaces of the parts and the result was a high-value movement that would perform its functions over a long period of time. While experts may say that the escapement largely determines the quality of a movement, it's the attention to finishing important moving parts that intermesh or work with each other that will pay homage to a good escapement. The finishing of the pinions, wheels, pivots and jewels in particular in the early 500 series sets them apart from many of their contemporaries.

The incabloc resistance shock absorption system was of superior quality, giving the balance greater protection against the knocks and jolts of daily life.

The 470/490 and early 500 series calibres were designed by Edouard Schwaar. More than a million of this family of movements was produced between 1955 and 1960. Both unadjusted and certified chronometer movements graced a number of models including Seamasters and, of course, Constellations.

## Calibre 501

The calibre 501 was released in Constellations initially as a 19-jewel configuration in 1955. In 1957, the jewel count was increased to 20.

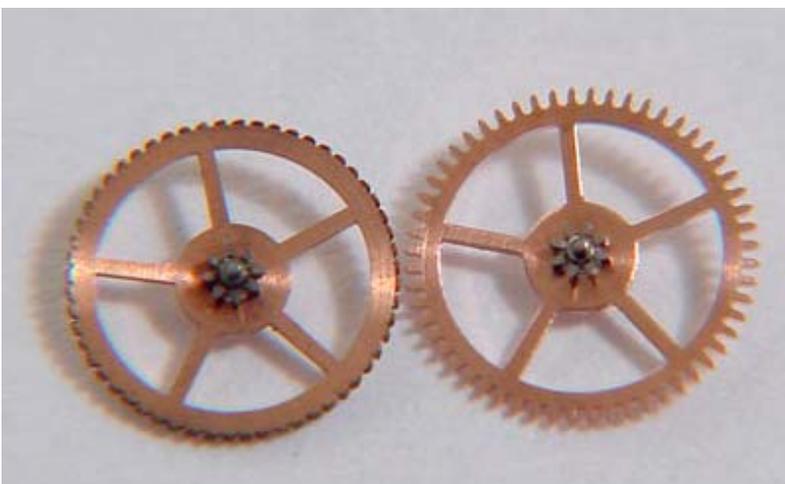
Calibre 501 Constellations are not as sought-after by collectors because Omega Seamasters also shared this calibre. Containing identical dial feet apertures, it's been a long established ruse by horological villains to swap Seamaster dials with Constellation dials and pass off Seamasters as Constellations. Another practice is to replace a Seamaster rotor with a Constellation rotor that contains reference to chronometer adjustments.

The bronze alloy rotor bearings in all 500 series movements were known to suffer wear if irregularly or incorrectly serviced. In the early series calibres 501 to 505, Omega produced the bearing assembly as an independent part, and, while easier to replace the entire mechanism, any good watchmaker could disassemble the rotor mechanism and replace the bearing assembly without too much difficulty. In later mid-500 calibres this option was not available.

In fact, that is not the only problem with the 490/500 series winding systems if the



Calibre 501 – 19 jewels. Notice two fewer jewels on the rotor bridge than the 24-jewel calibre 504

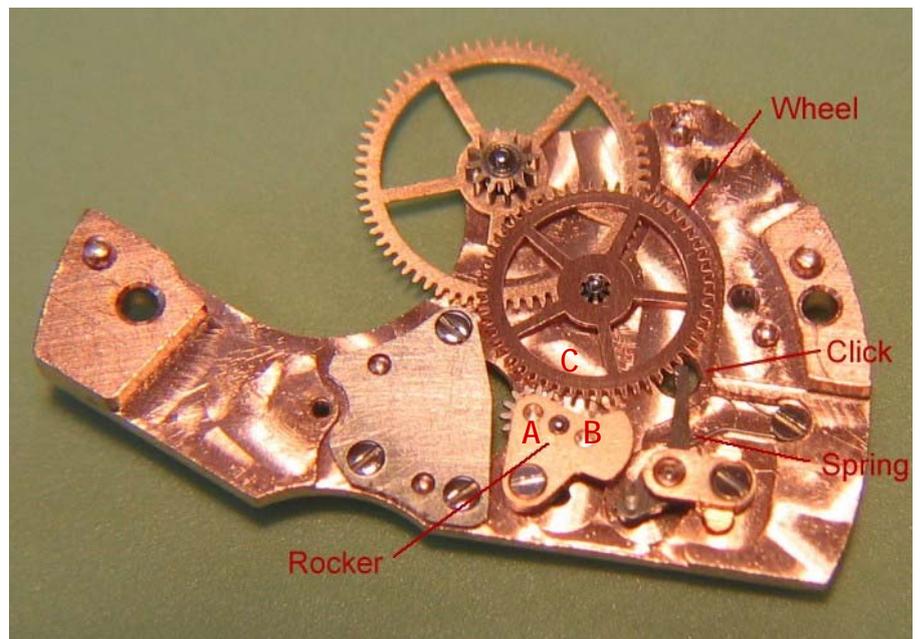


Wheel on the left: Reduction wheel from a neglected early 500 series winding system. Wear caused by the spring loaded click mechanism in an that was . Wheel on the right: New wheel showing the teeth as they should be. Photograph courtesy of Tim Mackrain

movement was not cared for and serviced at regular intervals. There were problems with wear on the reduction wheel of the winding system caused by the spring-loaded click, which could wreak havoc on the wheel over time if the movement was neglected.

The early 500 series were the first gent's Constellational calibres that featured a bi-directional automatic winding system. The rotor drives the left rocker wheel **A** which also turns the right rocker wheel **B**. When the rotor turns counter-clockwise (from this viewpoint) the left rocker wheel drives the first reduction wheel **C** counter-clockwise. When the rotor turns clockwise the rocker swings counter-clockwise so that the right rocker wheel then turns the reduction wheel again in a counter-clockwise direction. The click prevents any reverse motion from the mainspring tension. The picture above is of a regularly serviced movement, and you will notice the dramatic difference between the reduction wheels in the picture overleaf and the wheel in this early 500 series calibre.

The rub is that the 19 jewel 501 chronometer movement was only produced for a very short time (1955-7). While more than a half a million calibre 500 and 501 pieces were produced for a range of models, a comparatively smaller number were certified chronometers, and, therefore, the availability of spare bearing assemblies and rotor assemblies was limited from the outset. My understanding is that if asked to complete a restoration on a calibre 501, Omega in Bienne will substitute worn assemblies with "non-adjusted" 20 jewel inscribed rotors because supplies of both the rotor bearing and full rotor assemblies have been exhausted.



Picture courtesy Jim Hodek



Close-up of the click of an early 500 series winding system. Picture courtesy Jim Hodek

This is not to say that you should avoid calibre 501s altogether, but you need to be aware of the parts issues and indeed the potential for skulduggery offered by this calibre.

Some 501s came with beautiful guilloche dials with arrowhead markers, and with care in establishing case, dial and movement authenticity, there is no reason why the 501 should not have a place in your collection.

## Calibre 503



Omega calibre 503. Notice absence of 'Adjusted to five (5) positions and temperatures' that appear on chronometres

The 20-jewel calibre 503 is even more problematic. Out of the more than 163 thousand pieces produced, some 503s were issued with a chronometer bulletin and fitted to Constellations. The numbers, I'm told, were quite small and the vast majority of calibre 503s powered Seamaster and Geneve models. This is one calibre that I am inclined to avoid. There doesn't appear much in the way of logical argument to collect them, as the probability of netting a fake is high and the 503 offers no discernable advantage over the 20 jewel 501.

I think that a better collecting path to take – if one decides to focus on early 500 series calibres as the object of a collection – is to collect examples of 19 and 20 jewel

calibre 501s, some good 505's and a few of the rarer 504 date models for good measure.

## Calibre 504



Calibre 504 - date model 24 jewels: Notice the calibre number is stamped on the rotor bridge as opposed to the train bridge

Calibre 504 was the first date model to appear in the 500 series Constellation range, believed to have been released just after, or concurrently with, the calibre 502 non-chronometer date model. Only 25,000 calibre 504s

were produced, adding to their collectibility, and, as such, the calibre often has a special place in the collections of Constellation aficionados. The date setting is not of the quick-set variety and it is quite a laborious task to set the date if you take the watch out for irregular walks on different days of the month. Coupled with its comparative rarity, it represents good historical and investment value.

Calibre 504 featured a number of very attractive dials with arrow-head, faceted and onyx inlaid markers. The first dated version of the Grand Luxe was also powered by a calibre 504 and the gold dial with gold and onyx markers is a feast for the eyes.

## Calibre 505

The 24jewel calibre 505 represents the high point in the development of the early 500 series calibres. The 505 is basically the same movement as a 501 but with added jewels.

As with other early 500 series movements, It's becoming rarer to encounter 505s that retain all their original factory fitted parts. Apart from examples that have spent most of their lives in boxes or others that have been lovingly cared for and regularly cleaned and oiled, it's a normal state of affairs that parts will wear and need replacing. The winding systems appear to be the most common replacement, often noticeable by the difference in the hue of the copper plating on the rotor bridge.

As with the mid-500 series, many of the early 500 series parts are interchangeable which means that there will always be a temptation by repairers to find a part that fits from other calibres in the 500 – 505 range, and at times even a calibre 490 parts watch may come in handy for some spares. This has produced a number of interesting departures from original specifications often seen in on-line auctions. With minor parts I don't see a problem, however value and collectibility are compromised if incorrect rotors, rotor bridges, balance systems and train bridges are fitted.



Calibre 505 Movement with redundant regulation screws on the balance. Notice the "Adjusted" script on the rotor. Observe also the earlier version of the swan neck micro-regulator that differs from later 564 series regulators

If you do not have access to a specialist Omega watchmaker who either has excellent parts sources or keeps a good supply of parts and parts watches to call upon, it may be worth your consideration buying (as suggested with 300 series movements) specific calibre parts watches yourself. An early 500 in good 'nick', offered together with a parts movement is a very attractive proposition indeed to most serious collectors.

Irrespective of claims about servicing by dealers and sellers, when you buy a vintage Constellation 500 series one of your first steps should be to have the movement checked to ensure it has been properly disassembled, cleaned and oiled. This is your greatest insurance against future wear.