Omega Movements Part 1

The acquisition of an Omega Constellation should be an enjoyable affair, not one marred by uncertainty and fear over the originality of the watch. By attempting to provide information on the engine that powers these outstanding timepieces, I hope that I will be making a small contribution towards people making informed purchases and thus ensuring that it is indeed a pleasurable experience.

While collectors are not usually watchmakers or horological experts, it behoves the astute collector to get to know his or her way around the movements of their favourite brands. By examining a cluster of indicators that point towards or away from authenticity, collectors can make their purchases with a much greater level of confidence.

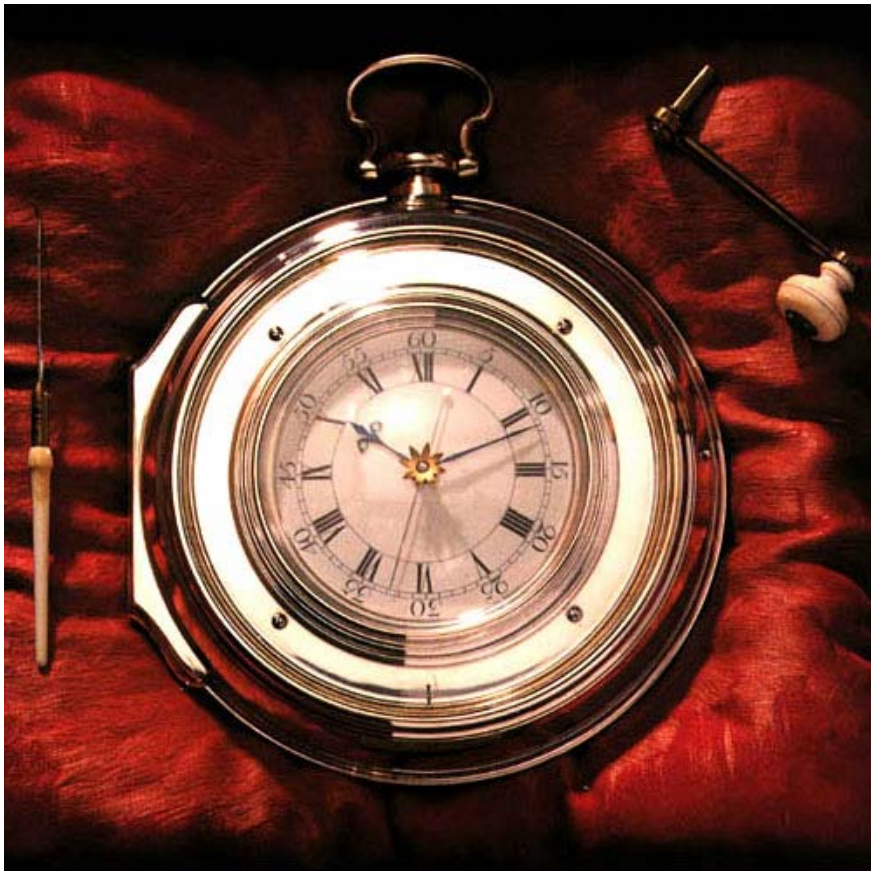
The history of in-house manufacture Omega Constellations is marked by four series of movements: The 300 (only calibres 352 and 354) series, the 500 series, the 700 series and the 1000 series, the earlier three series at this stage commanding greater attention from collectors than the 1000 series. In this article, each of the main calibre groups will be reviewed along with information about determining condition and originality.

The information and advice contained herein is a synthesis of many sources: from numerous like-minded Omega devotees with whom I correspond, from generous contributions by horologists and Omega aficionados in on-line forums, from publications such as Omega Saga and Omega Designs, and from my watchmaker-mentor Paul Naylor. I thank and acknowledge you all.

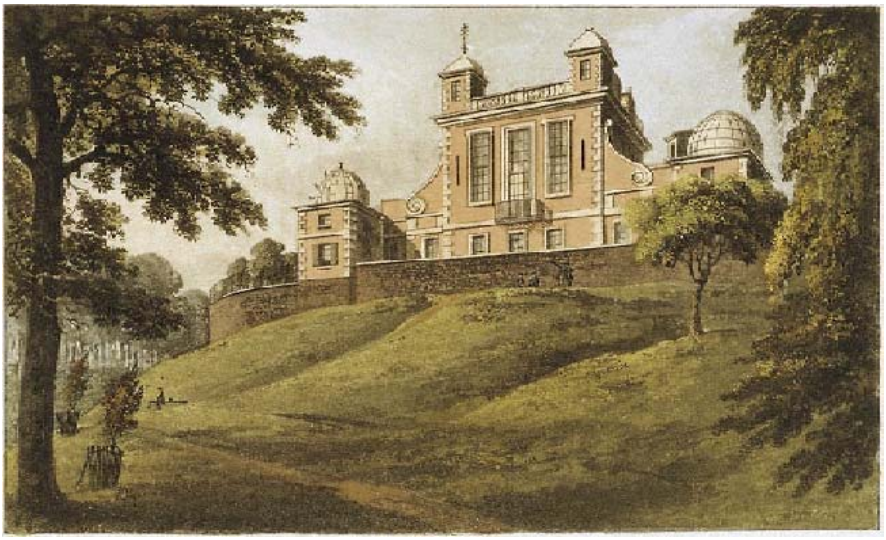
What is a Chronometre?

The word ‘chronometre’ was coined by English clockmaker, Jeremy Thacker, in 1714 to describe his design of a clock entombed in a vacuum chamber that protected the movement from the vagaries of humidity and atmospheric pressure.

Thacker’s chronometre was accurate to six seconds a day, falling well short of the three seconds a day required to win a 20 thousand pound ‘King’s Ransom’ offered by the English Board of Longitude in the 1700s. It was John Harrison’s H5 ‘pocket’ chronometre produced in 1772, accurate to one third of a second per day, which ultimately earned him the title of The Father of Longitude and led to the greatest breakthrough in navigation since the beginning of time.



John Harrison’s H5 ‘Pocket’ Chronometre: tested at Kew Observatory by George III and Stephen Demainbray in the 1770s.



Royal Observatory Greenwich in the 18th Century

Harrison's chronometres and their descendants allowed Britannia to literally rule the waves. Precision timekeeping in all conditions gave a navigator the means to fix longitude by acquiring local noon through observations of the sun as it moved due south of the ship's position and comparing it with Greenwich time. The difference in the two times would be interpreted into degrees and minutes of arc and then further translated into nautical miles east or west of Greenwich.

Marine chronometers ended forever the legacy of shipwreck, misery and death caused by not knowing where one was on the world's great oceans.

Navigation has had a long association with astronomical observatories because of the tradition of navigation by the stars and the widely held belief that the secret of longitude would be found through understanding of the earth's position relative to other bodies in the heavens.

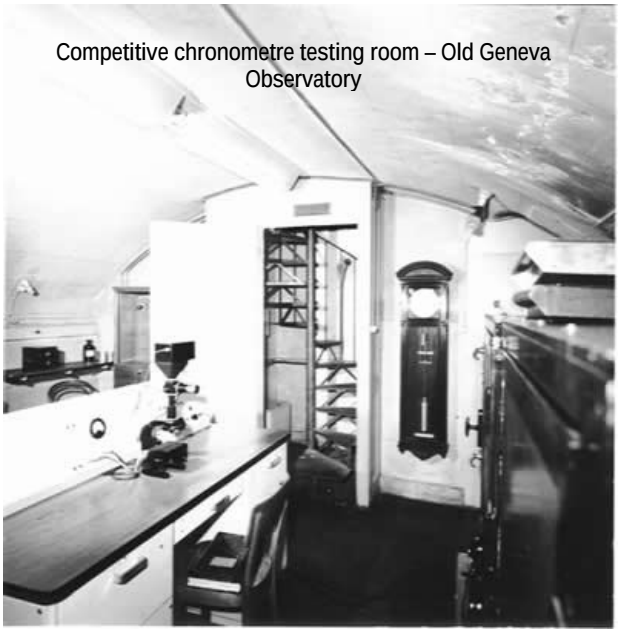
Without going into the great scientific arguments that occurred on the subject in the sixteenth century, it is suffice to say that time won out over the heavens and the association of precision time-keeping with astronomical observatories was an outcome of those great debates.

The Role of Observatories

The old l'Observatoire de Genève. The observatory was closed in 1966. A new Observatory at Sauverny on the outskirts of Geneva was opened in 1967. The Constellation observatory medallion is said to be modelled after the Domes of this observatory.

Important European and U.K. observatories became involved in the certification of chronometers in the 1800s as a means of quality control for marine chronometers. Ship's captains needed to have confidence in chronometers supplied to their vessels because of the vital role they played in the safe and accurate navigation of the world's oceans.

In those days, marine chronometres were not rated on the basis of pass or fail as they are today, but subjected to a battery of tests often for a month or more in order to receive a grading along a specific performance scale. Observatories to this day in many parts of the world continue their monopoly on time, using atomic clocks to tell the time with astonishing precision. So, chronometres have been inextricably connected with accuracy in time telling since the association between longitude and observatories began.

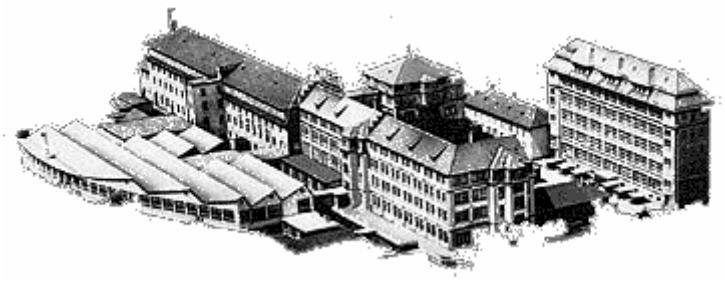


Competitive chronometre testing room – Old Geneva Observatory

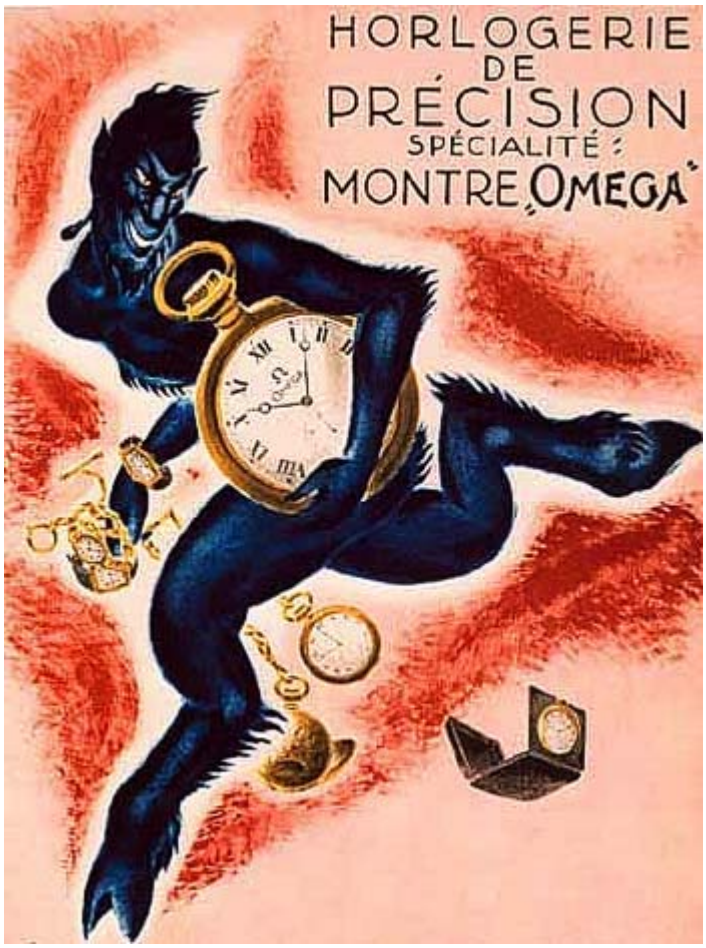
In the strictest sense it is incorrect to describe a movement as a chronometer grade movement. A chronometre is a timepiece with a chronometer escapement. These extremely sensitive and delicate escapements are not fitted to wristwatches.

Enter the Competitive Spirit

In Switzerland, competitive chronometer testing took place at the observatories in Neuchâtel (1866-1975) and Geneva (1873-1967). In the 1920s and 30s highly spirited competitions were also held by observatories in a number of important centres in Europe and the United Kingdom. The Omega 30.10 mm won numerous contests against the most notable houses of the day, often achieving victory over Patek Philippe and Rolex, the market leader in chronometres.



Omega introduced commercially the 30.10 chronometre in 1939. By 1946, it had built more than 100 thousand certified chronometres, many of which were used by various combatants in World War Two. Having established its credentials through the 1940s at major competitions, Omega decided to exploit fully its reputation as a builder of precision watches, and planned a new line of chronometres.



The Birth of a Constellation

A name commensurate with the horological DNA of the line and synonomous with precision and luxury had to be found. The name Constellation was suggested to Omega's Italian agent, Carlo Di Marchi, by a member of his sales team, Bruno Passoni. Di Marchi thought it had a ring to it and spoke with Omega Sales executive, Adolph Vallat, and the rest is history. In 1952 Omega released the first collection of Constellation chronometres.

Observatories, generally, did not test large numbers of watches, and most houses entered competitions in search of an enhanced reputation for precision and accuracy and the marketing opportunities presented by winning over other houses. For large-scale production, government regulated testing bureaux were used to gain chronometer certification.

In the early days of the Omega Constellation, the testing was undertaken through laboratories known as Bureaux Officiels de Controle de la Marche des Montres, generally referred to as BOs. Movements were customarily evaluated for 15 days, during which they were tested in various positions, at temperatures between 4 degrees and 36 degrees Celsius, with the variances in performance being measured against a range of averages.

It must be said, however, that the Swiss horological establishment, the government and its regulating bureaux operated in the 'national' interest where the Swiss watch industry was concerned. Chronometer certification can be seen in the light of Swiss collusion to maintain primacy of its product and to provide a credible framework for the industry's long-term marketing mantra of unsurpassed quality, durability and accuracy.

In the early 1950s, just before the launch of the Omega Constellation in 1952, the Fédération des Horlogers Suisses drafted a curiously self-serving and nebulous definition of a chronometer as "A precision watch, which is regulated in various positions and at different temperatures and has received a certificate to that effect." This completed the expropriation of the venerable name 'chronometre' from that which described a movement with a highly specialised escapement to that of a more general term that described the relative accuracy of lever escapement timepieces produced by Swiss manufacturers.

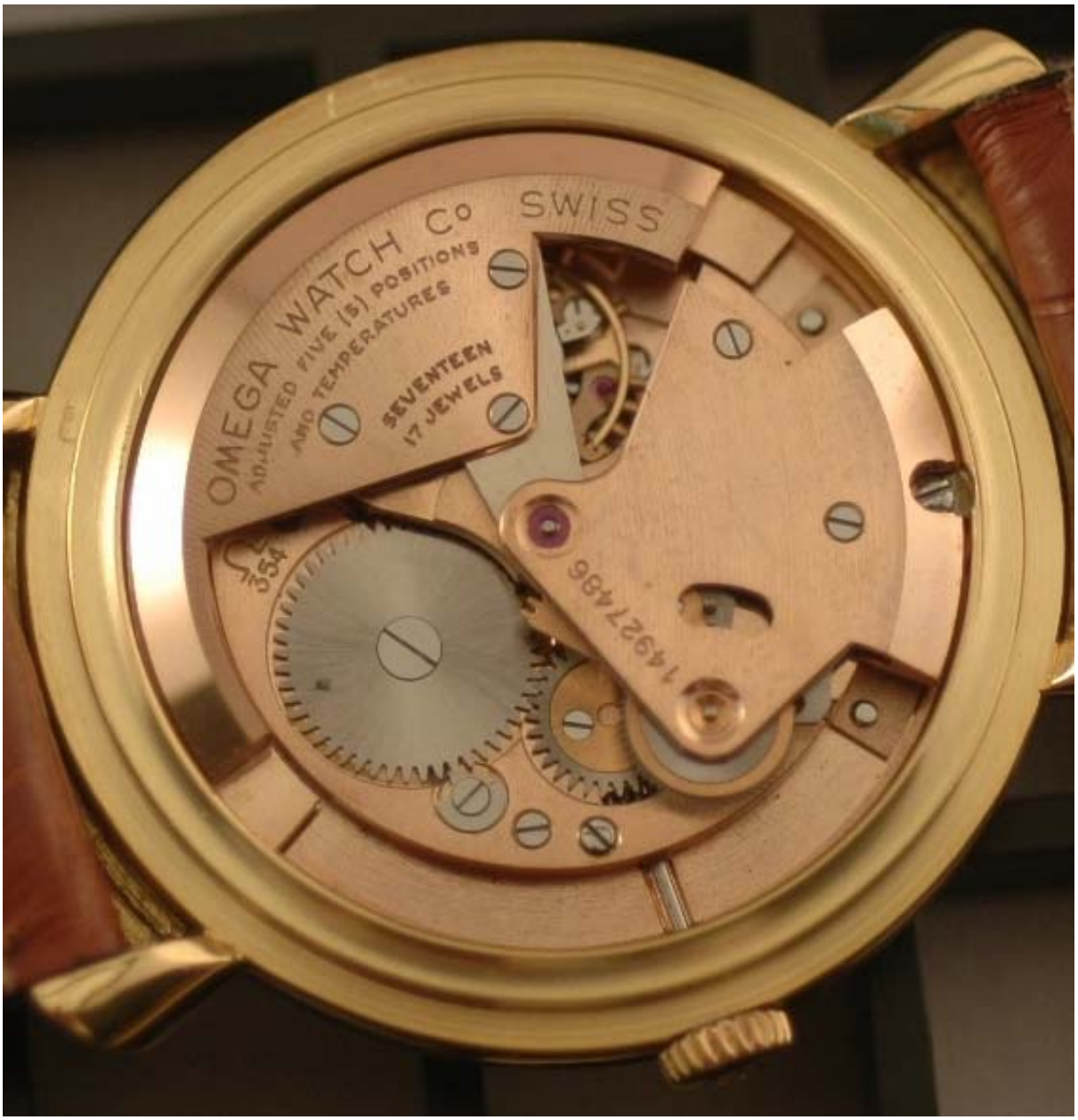
Adjustments of chronometres for accuracy were carried out by specialists watchmakers in the Omega factory whose job it was to 'tune' the movements - much like a professional car tuner - to get them running as sweet and accurate as possible in various conditions. Hence, the stamping on the rotor of earlier Constellations, and later on the rotor bridge, with the words, "Adjusted to five (5) positions and temperatures". It was the job of the Régleur to ensure that all Omega chronometre movements bettered the –4 and +6 seconds per 24 hours criteria imposed by the BOs.

All Constellations manufactured until 1973 went though BOs and received a 'bulletin', or certificate, indicating their performance against the measuring criteria applied. This entitled Omega to claim chronometre status of all watches that were tested and approved, hence, the chronometre appellation on the dial.

In 1973, the BOs were officially merged and administered centrally by a directorate. This new centralised testing institute with representation in Le Locle, Bienne, La Chaux-de-Fonds and Geneva was named "Controle Officiel Suisse des Chronomtres" (Translated: Official Swiss Chronometre Control) or COSC. The merger was meant, according to some, to lend a greater level of consistency and credibility to the Swiss chronometre appellation. It was clearly also an attempt to rationalise a hotch-potch of testing bureaux at a time when the Swiss industry was coming under increasing competitive pressure from quartz technology.

Chronometres do have status over non-chronometres, as can be seen in the demand and values of a range of Omega models of the same period. The materials and finish of chronometre movements are generally of a higher quality than lower level production watches. They are generally more collectible and command a premium, often significant, over non-chronometres. But, one can't help but thinking that some of the premium paid is for value that has been created by Swiss spin doctors who have been highly successful over time in convincing consumers that Swiss is best and chronometers are better. Fortunately, for most of the time in the 1950s and 60s they were right.

The 300 Series

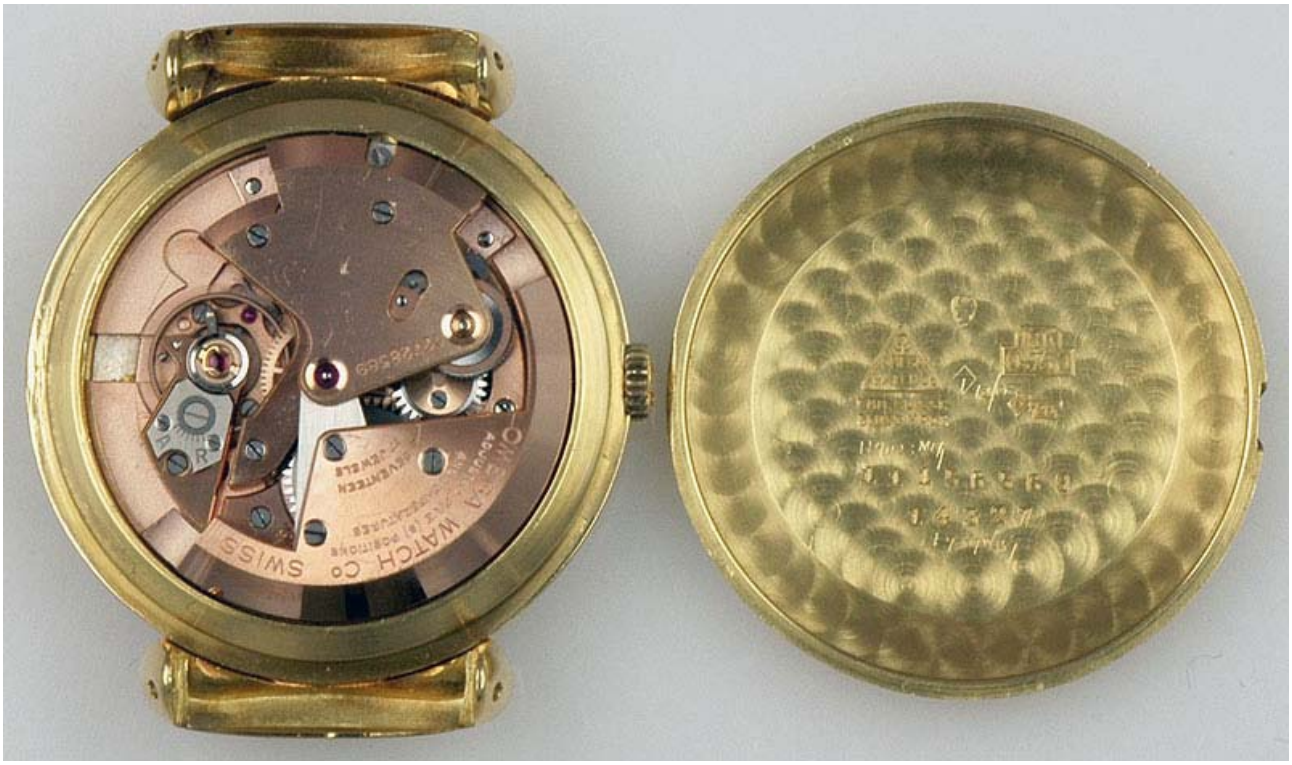


The early 1950s automatic Constellations featured the 17-jewelled 352 or 354 hammer self-winding calibres (Known colloquially as Bumper Movements). These calibres were not new to market and had more than a decade of development before they were earmarked for the Constellation range.

Omega released the first of the Constellation range in 1952 housed in case 2648. Omega launched the new brand with a modest production run of approximately 8000 watches. Some of these case numbers featured calibre 352 movements, some had the RG micrometer regulator (see on following page) instead of the famous swan neck, and some featured calibre 354 with swan neck micro-regulator.

It is stated by Omega however that Calibre 354 was the first movement used in the Constellation line. It is speculated that in those early days of the marque a few Seamaster chronometers were press-ganged into

serving Constellations to make up for shortages of calibre 354 movements. The example below, for example, was produced in 1953. What is known is that the first Constellations caused quite a sensation. Demand for the marque was very strong from the outset and the Constellation quickly established itself as the company flagship.



Calibre 352 worked up to chronometer status with rare RG microregulator. DeLuxe Constellation chronometer model OT 14327 Confirmed genuine by Omega

The Constellation bumper movements were based on a design by Charles Perregaux under the direction of long-term technical director, Henri Gerber. Known in-house as Cal. 28.10 RA SC - 354, they were slightly smaller movements than the famous 30.10mm, but shared essentially the same fundamentals.

The Omega 300 series bumper is a relatively uncomplicated movement, fully jewelled (17 jewels) to the centre wheel and the upper and lower pivots of the oscillating weight. The winding system operates through the oscillating weight moving in an anti-clockwork direction to drive a ratchet wheel (used to restrict motion in one direction). Pawls (thin protrusions or clicks that rest against the gearwheel) are mounted on the rack arm and barrel bridge. The ratchet pinion connects to the crown wheel and then the main ratchet wheel on the barrel to wind the mainspring. It has a straight-line lever escapement, sporting a monometallic balance, a self-compensating flat balance spring, a swan neck regulator and an incablok anti shock system.

The bumper design was more than 30 years old when first used for Omega Constellations. While there is some debate on the origins of the design, it is generally believed to have been invented in the 1920s by Englishman, John Harwood. It isn't the best of technology, as it takes a considerable amount of normal arm and wrist movement to wind a bumper fully. The rotor oscillates in an arc of about 130 degrees and favours movement in the direction of the mainspring. This has been corrected by the use of compensating weight on the rotor that encourages it to move away from the barrel bridge to wind the mainspring.

The reason why unidirectional rotor movements are called bumpers is because of the pleasant 'thud' one feels when the rotor returns to the winding bridge. Quite a degree of force is involved in the oscillation of the rotor

and this most certainly causes wear, a factor taken into account through the robustness of the build of this movement.

A novel aspect of bumper movements is that they perform best when worn on the left wrist. Wearing a 300 series of the right wrist interferes with the anti-clockwise oscillation of the rotor weight and results in very limited winding opportunity.

Over 1.3 million of these movements were produced between 1943 and 1955. They are a classic: well designed, made robust to handle the strong vibrations caused by the rotor action and still going strong on the wrists of owners of early automatics, Seamasters and Constellations. Over half a million of these movements were certified chronometers.

Because the calibres 352 and 354 were also the power source for both chronometre and non-chronometre Seamasters, they present as an ideal opportunity for our usual horological suspects to do their dastardly work and re-badge Seamasters as Constellations. An example of this is shown in the article on Constellation case numbers. When seeking out these calibres for your collection, choose to consider known case numbers and ensure you look carefully at the movement and dial to establish authenticity.

If you are intending to purchase an early Constellation powered by a calibre 354 or 352 movement, you would be wise to look around to purchase an additional 'parts' movement. Parts are becoming scarce, particularly second-hand rotor assemblies, and an additional movement on hand may save the worry and wait for parts to surface should your watch be in need of repair.

The 300 series finally gave way to a new breed of bi-directional rotor winding movements and in 1955 Omega released the first of the 500 series calibres, while finally exhausting its stock of bumpers in around 1957

Authenticity and reliability Checks

- Check the rotor for the 'Adjusted to five (5) positions and temperatures' stamping.
- Ensure you have a cluster of indicators that prove authenticity: movement, dial and case.
- Confirm serial number against Omega serial number dates.
- Check serial number date against known release dates of case numbers – allow for a margin of up to two years.
- Check calibre 352 or 354. Calibre 352 models should have Rg Regulators.
- Check balance assembly for rust
- Check crown and ratchet wheels for rust
- Check for inner case rust
- Check regulation to ensure watch is not advanced or retarded to one extreme or the other
- Obtain details of last known service
- Look for any colour differences in electroplated copper plate on movement parts