

OMEGA



TECHNICAL GUIDE

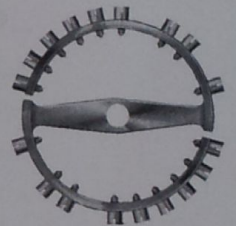
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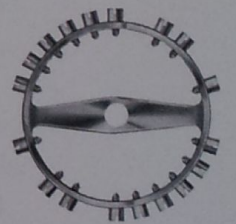
OMEGA

have adopted the screwless balance

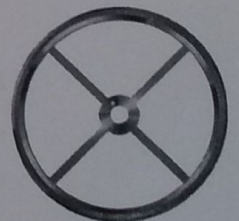
Formerly, thermic variation of the regulating unit was compensated for through the use of a steel hairspring allied to a BI-METALLIC BALANCE with cut rim. Variations in the elasticity of the hairspring was then compensated for by displacing one or several pairs of screws around the rim. Later on, physicists and metallurgists developed hairspring alloys which are unaffected by temperature variations. Thus eliminating the need for the compensated bi-metallic cut balance which was superseded by the



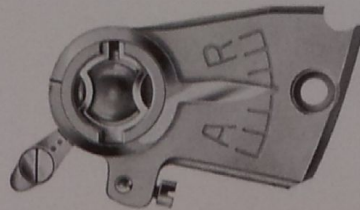
MONOMETAL BALANCE, made of beryllium bronze. The screws were retained as, through milling their heads, the balance could be poised. Furthermore, by filing the screws, or by inserting small washers under their heads, it was possible to alter the balance weight and thus control the movement rate.



With the SCREWLESS BALANCE, these two operations are eliminated and equipoising is accomplished by milling the lower face of the rim.



Besides, it is no longer necessary to adjust the weight as a two-piece regulator (see illustration) permits, through displacing the pin-holder, altering the active length of the hairspring without moving the pointer.



The two-piece regulator has proved most successful for the last few years and now we are adopting the SCREWLESS BALANCE, the chief advantages of which are:

Greater rating stability

due to the increase of the moment of inertia, thanks to a larger rim.

Stronger construction

owing to the 4 arms assuring greater support and constant symmetry of the rim which, besides, is no longer weakened by drilling, tapping the holes and blocking the screws.

Friction and wear of pivots reduced

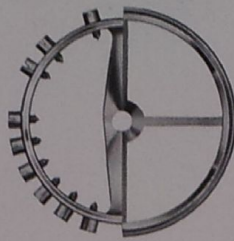
because the balance is lighter.

Resistance of air lessened

as the screws have been eliminated, aero-dynamic friction is minimized resulting in greater power utilisation.

Maintenance easier

The OMEGA screwless balance has a smooth diamond lapped rim. Cleaning is thus simplified as dirt and dust cannot lodge in the screw slots or under the screw heads causing rate interference that is hard to detect. When comparing two balances having the same moment of inertia, a regular one with screws, the other screwless, we observe that the latter is lighter, even though it has a greater radius of gyration. This reduced weight offers the advantages referred to above.



As there are no screws, it is possible to extend the weight volume of the balance rim as far away from the staff as space permits. Within the same area of space, it is possible to locate a balance of greater moment of inertia which is most beneficial, since the power impulse of a balance increases proportionally to its moment of inertia. Now, in order to amplify that moment, it is preferable to increase the diameter of the balance rather than its weight. Thus, by extending the rim farther away from the center, a greater radius of gyration is obtained, which allows for reducing the weight of balance while partly retaining the increase of the moment of inertia.

In view of these advantages and improvements, proven after exhaustive research and tests, OMEGA have adopted the screwless balance. Our new caliber 482 will be the first equipped with this new type of balance (and two-piece regulator).



Calibre 482 (12.50 PC T2 AM 17 jewels)

RESULTS OBTAINED FROM 10 WATCHES

Calibre 551 (27.90 RA SC PC AM 24 jewels)
equipped with the screwless balance



Nos. 17000011 to 17000020

22nd January 1959

at the Official Office for the Control of watches in Bienne

Variation of the daily rating (in 24 hours)
for each of the 5 following positions, expressed in seconds:

Watches Nos.	1	2	3	4	5	6	7	8	9	10
Crown left	2	0	2	1	1	2	1	1	0	1
Crown up	1	0	0	0	0	1	1	1	0	0
Crown down	1	1	1	1	1	0	1	2	1	2
Dial up	1	0	0	1	0	1	0	1	0	2
Dial down	2	4	2	0	0	1	0	1	1	0

