

Restoration of an Eternamatic Gents Wristwatch – ca. 1940

I do admit, I get somewhat excited when a watch comes in that has seen lots of hard use and I'm given the opportunity to bring it back into not only good working order, but also cosmetically clean condition.

Just such a watch recently came in and the customer asked to have it completely refurbished. The following shows before and after images of the watch, inside and out. I've also included some commentary as to the steps involved in bringing the watch back into service.

This is what the watch looked like when it came in. The brand name was barely recognizable through the discolored crystal and the age and water damage as evidence on the face.



The case, as can be seen in the following image, is filthy, shows minor scratches and abrasions and is clearly not a presentable piece to wear. Also note how the crystal is not only yellowed, but also crazed with little stress cracks as will happen after many years of neglect.



Once the movement was removed from the case, it became evident that the watch had sustained significant water damage to the mechanism. With the self winding mechanism removed, clearly there is rust on the winding wheels, the regulator, the self-winding weight and a number of screws. There is likely some rust also on the pivots of the gear train that have prevented the watch from operating properly.



Here's a close-up of the movement to further illustrate the pervasiveness of rust on the wheels and plates.



With the dial removed, there was less corrosion on the front plate, but clearly, the dial and hands also sustained damage from the water that penetrated the case. The luminous material on the numeral has been stained, the lacquer covering the silvered finish has peeled away and the surface of the dial has also become compromised. Also note that the hands have begun to rust and the luminous material is nearly black. Some has even fallen out.



So now the watch will be completely disassembled and thoroughly cleaned in an ultrasonic tank, cleaned again in a rotary cleaning machine, rinsed twice and dried. Then the every last piece is inspected for wear, corrosion of anything that would compromise the functionality of the watch.

The ratchet wheel was particularly corroded and required a significant amount of re-finishing. The wheel was first cleaned with a fiberglass brush and then applied to a fine Arkansas slip to determine the amount and depth of the pitting. Once it was clear that the pitting was significant, it was decided to re-surface the wheel and replicate the original finish as closely as possible.

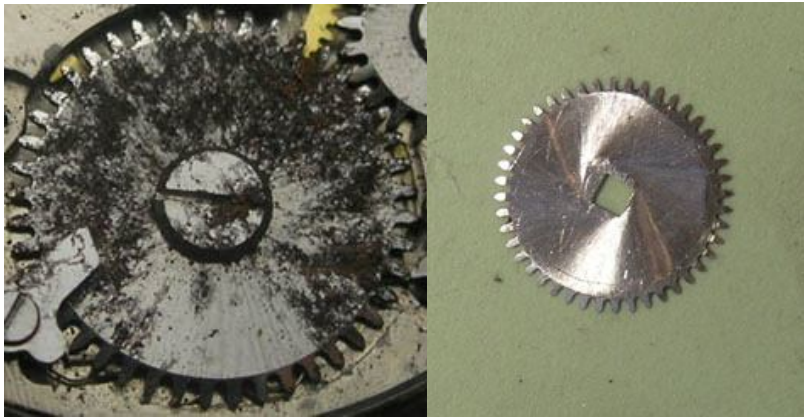
The wheel was glued to a brass block and then held in clamps on a rotary table of a 4 axis milling machine. The milling head was inclined in such a way as to offer an angled finish to the wheel.



A thin “dremel” style grinding disk was mounted in the mill and lowered to the wheel while the rotary table was turned.



The result was a finish closely resembles the original and all the pitting was removed without sacrificing the integrity of the wheel.

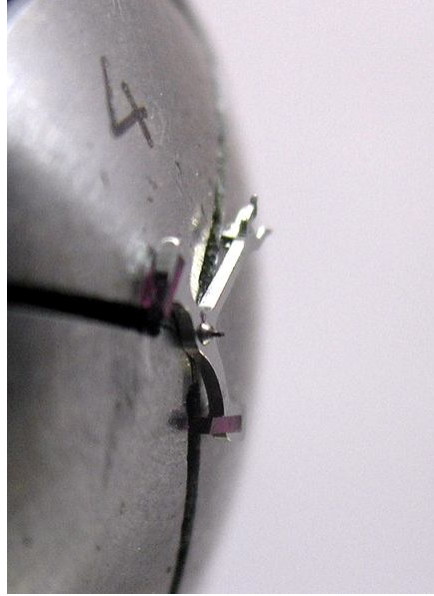


Next step is to begin removing the rust from the various screws that also sustained corrosion and refinish them to best possible condition. Most will be mounted in the lathe and hand finished with fine Arkansas slips and emery paper in progressively finer grits.

Some will require adapting the lathe with a specific screw polishing tool to dress the beveled edges of certain screws.

Then the other assorted parts will be addressed, such as the self winding rotor, great train pivots and plates.

Here, the pallet fork top pivot had some rust that required cleaning up and burnishing to bring it back into good order. The lower arbor is mounted in a .4 mm lathe chuck and the top pivot is dressed with an Arkansas slip followed by progressively finer grades of emery paper.



The entire watch is again cleaned twice, rinsed twice and dried. Once a new mainspring is fitted, the watch is then re-assembled and tested. Here we have the completed movement ready for testing rate and amplitude.



Once a satisfactory rate of timekeeping is attained and the balance wheel has sufficient amplitude, the refinished dial and hands are fitted.

The watch case gets a full make-over too. The steel is resurfaced with a satin wheel from the buffing machine. The areas that require high polish are also treated. Then the case is cleaned ultrasonically, rinsed and dried. A new crystal is selected and fitted.

Once the movement has tested for a number of days, it's cased and tested again on the automatic winding machine to assure that it will operate satisfactorily as if it were being worn on the wrist.

The customer requested a new leather strap be fitted to complete the project and the watch is ready again for years of service.

All of this work collectively took about 5-7 hours of work. And for about 30% of the cost of a new comparable Swiss timepiece, this family heirloom has been restored and will be treasured for future generations.

Before and After



