

## Ken's Clock Clinic Style F Self Winding Clock Restoration Process

Step	Description	Explanation
1	<b>Full</b> disassembly of movement	It is only possible to clean the movement correctly if <b>fully</b> disassembled. While some will ultrasonic clean a movement fully or partially assembled, we will not. It results in rust, trapped contaminants, accelerates wear. Movement can only be properly repaired if full disassembly is done.
2	Ultrasonic clean all components	Each component is cleaned and brushed to remove difficult dried grease, oil, oxidation, and light rust.
3	De-rust steel parts (add'l cost if severe) and redress, re-blue screws which are badly marred.	Pillars, arbors and other steelwork are often rusted from clocks sitting for years in basements, attics, or other damp locations. Our de-rusting removes a majority of this oxidation, offering lower friction. It also inhibits further rusting, conserving the clock.
4	Individually brush each component clean and bright	Each part is brush polished for two reasons. Most importantly, it is easier to spot problems, wear, defects. Second, it removes oxides which are a subtle source of wear.
5	Special electrolytic cleaning to all conductive parts	Self-winding clocks operating from 3 volts require super clean connections in order to avoid resistance related power loss. We use a special process on all conducting parts to assure low loss connections. The result is better battery life and shorter wind time.
6	Inspect each part for wear	Each part receives under-the-microscope inspection for wear and contact damage.
7	Super polish all movement pivots	Pivots receive a 3-step restoration process: Stoning to remove wear marks and ridges, burnishing, and final polishing. The pivots are super bright and smooth when finished, assuring long life of mating bearing surfaces described in 8 below. If repivoting is required, it is done at this time.
8	Custom bushings finished flush as original (plate work). Replace barrel cage bushing as needed. Fabricate replacement motor bearings if worn beyond service.	We use a time-tested method of bushing worn plate holes. It involves custom brass sleeves riveted and shaped to blend with the original oil sink. The new bearing surfaces are thus work hardened and long wearing. Unlike the often-used press-in box bushing method, is minimally invasive to the plates, assures proper relative placement of wheels, and results in a movement that looks and runs like new. Replacement barrel cage bushings will be custom fabricated if worn; these cannot be rebushed.
9	Address worn pinions	While it is unusual for train wheels to be worn, the pinions often are. Tracks get worn from decades of continuous friction. This will cause lost power, which will stop the clock eventually. These can often be restored by removal and reversing. At times it may be necessary to replace the pinion(s).
10	Resurface and polish winding wheel large pivot	An often-neglected repair, it is a point of significant wear with F style self-winding clocks. Helps assure quiet, smooth, efficient winding and longest possible battery life.
11	Rebush ratchet arm assembly	Complementary repair to 10 above. Ratchet clearance is minimal and must be a tight bearing surface.
12	Grind, polish and readjust both ratchet pawl surfaces	Assures positive, slip-free winding for optimum efficiency and smoothest wind. Also contributes to optimum battery life. Greatly needed since original ratchet pawl surfaces are almost always so worn that it becomes difficult for them to "catch" reliably on the fine ratchet teeth. Left unaddressed, the result will be a destroyed ratchet wheel.
13	Super polish motor arbor pivots. Replace linkage pin if needed.	Another often neglected repair, assures long life and smooth, efficient winding and optimum battery life. Motor often requires linkage pin replacement as well, which can be worn so significantly that it affects efficient transfer of motion to the ratchet arm.
14	Polish escapement pallets and readjust drop and lock. Top escape wheel if needed.	Style F movements utilize the highly accurate Graham deadbeat escapement. In order to assure accurate timekeeping and reliable run, escapement wear <b>MUST</b> be polished out. Once wear is removed, drop and lock <b>MUST</b> be readjusted. Escape wheel will be checked for true-running, and precision topped if problems.
15	Tighten center wheel hub	Often neglected repair, can result in erratic timekeeping if not addressed.
16	Replace or repair damaged wheels, contacts and other parts (add'l cost)	Contacts are often worn so thin that they subsequently break. This must be identified and corrected during the process. Wheel repair is preferred, then replacement, and if not available, parts such as verges, escape wheels (which wear significantly), ratchet wheels, ratchets, etc. can be fabricated.
17	Clean mainspring, rewind, replace or repair damaged or rusted mainspring (add'l cost)	Setting mainspring correctly is key to proper performance of Style F movements. To maximize battery life, the spring cannot be set too strong. To assure the movement will run reliably, it cannot be set too weak. The exact set is dependent on the spring strength, pendulum weight, and other factors. We fabricate exact replacement mainsprings if originals are unusable.
18	Replace or repair damaged main wheel detent pin	Main wheel detent pin initiates the wind sequence. Often missing, bent or broken, this pin will cause winding problems if not corrected.
19	Replace platinum surfaces on contacts	Platinum is often burned or worn due to incorrect voltages or extended use without service or cleaning. We replace with 99.99% pure platinum exact replacement materials (the pin is platinum-iridium), no substitutes for this very important contact material. Incorrect materials will slow winding or result in unreliable clock, which needs frequent restarts, or just won't wind at all.
20	Clean and replace any worn or broken insulators	Original insulators were made of early rubber material or pressed paper, which often become brittle or deformed. New insulators are fabricated and fitted which match originals exactly.
21	Final clean movement, assemble and oil	After pivot and plate work, parts may have metal shavings from machining operations, are oily, dirty, or full of fingerprints which accelerate corrosion. Second cleaning and rinsing removes these foreign substances, which might otherwise result in premature wear.
22	Replace and/or recondition washers and screws	Often, wrong screws are fitted, screws stripped, or just plain missing, due to previous repair attempts. We restore all screws to original specifications. We also de-rust, clean, polish and re-blue ALL screws to original appearance and robustness.
23	Precision adjustment of contacts and motor assembly	Key to optimum winding efficiency, motor starting, smooth and quiet winding
24	Adjustment of synchronizer components (add'l cost)	For units equipped with synchronizers. These long-neglected components are brought back to original specifications through our careful adjustments.
25	Clean and adjust hands, re-bluing if needed. Repair and reset hand bushings	Defective or mis-adjusted hand bushings can stop clock or cause imprecise hourly synchronization. Sometimes improper hands are fitted to SWCC clocks; this situation is corrected during the restoration to prevent interferences and binding.