WATCH TIP #32

"HOW TO RUN YOUR OWN QUALITY CONTROL CHECK ON AN AUTOMATIC WATCH"

I get asked this a lot and for good reasons. It looks something like this: someone gets their watch recently serviced, feels great about their newly serviced watch, sees my Instagram feed (@nobswatchmaker), and begins to feel a bit worried about whether their watches were properly serviced. Thus, I get bombarded with emails about how to run their own quality control check.

The closest thing I can come up with for you guys is a deviation of Rolex's 3 day quality control process. So without further ado, here's a quality control template that you guys can use at home.

DATE	POSITION	TIME	STATE OF WATCH	DIFFERENCE IN MINUTES PER DAY COMPARED TO THE DAY BEFORE
DAY 0	Fully Wound	Controlled Time		N/A
DAY 1	Dial Up			
DAY 2	Simulation on Wrist			
DAY 3	Crown Left			

EXPLANATION OF EACH CATEGORY

Let me interject and explain each of the category we'll be using first before I completely lose you.

DATE: Input the current date of each day you're checking the watch. So for our following examples, I'll be using February 10th, 11th, 12th, 13th, and 14th.

POSITION: I'll go over each position, but we'll check the watch in a completely wound state, Dial Up, Simulation on wrist, and Crown Left. For the sake of tracking, we use a position tab so that we can identify which position the watch is losing or gaining time.

TIME: The very first entry on the Time section will be your controlled time. This will be the time that we check the watch each day. Decide and input the time of when you're going to check the watch. **Remember, this is the controlled time that we'll be checking the watch**. If I'm checking the watch at 10:05AM, I should be putting 10:05AM each day in the Time section. Remember to set the time to something that won't deviate such as an iPhone, radio controlled clock, internet global clock, etc.

STATE OF WATCH: Input the current time that it says on the watch when you check it at the controlled time. Since we're checking it at the same time each day, we'll be able to log any discrepancies. We want to check if the watch is gaining or losing time compared to the controlled time. You are checking the watch **exactly 24 hours** after you choose a controlled time. The controlled time is what time the watch should say each day you check it.

DIFFERENCE IN MINUTES PER DAY COMPARED TO THE DAY BEFORE: Here is where we log any discrepancies in the time keeping. This section is to compare the current time to the day before, **not the controlled time**. We use this section to compare the time-keeping in one position against another position. This lets us know if the watch runs faster or slower in a specific position. Therefore we need the previous day's results in order for us to input any value in this. It'll be easier to understand once you see how we set this up.

Here's an example scenario:

DATE	POSITION	TIME	STATE OF WATCH	DIFFERENCE IN MINUTES PER DAY COMPARED TO THE DAY BEFORE
02/10	Fully Wound	10:05AM	10:05AM	N/A
02/11	Dial Up	10:05AM	10:07AM	**+2** (10:05AM + 2 = 10:07AM)
02/12	Simulation on Wrist	10:05AM	10:03AM	**-4** (10:07AM - 4 = 10:03AM)

We wind the watch fully on 02/10 and decide that our controlled time is 10:05AM. We check it on 02/11 at 10:05AM in Dial Up position and it says 10:07AM. I input 10:07AM into State of Watch. **The difference in minutes per day on 02/11 compared to 02/10 would be +2 minutes** (10:05AM + X = 10:07AM therefore X = +2) . The next day on 02/12 at 10:05AM in the Simulation on Wrist position the watch says 10:03AM. **The difference in minutes per day on 02/12 compared to 02/11 would be -4 minutes** (to go from 10:07AM to 10:03AM, there was a loss of 4 minutes therefore we input -4).

The best scenario is for the watch to be on time each time I check it. If my controlled time is 10:05AM, when I check the watch each day, it should say 10:05AM.

Now that you have an idea of what the categories mean, we'll go over the steps in how to populate them.

Here's how we'll be conducting our own quality control process. I'll break it down by day, what steps we'll be taking, and why.

1. DAY 0 - WIND THE WATCH AND SET THE TIME
First things first, you're going to wind the watch completely and set the exact time to an official time

clock. I call this Day 0 because that's really all we're doing. I would suggest The Official National Institute of Standards and Technology (NIST) US Time (www.time.gov) but anything that tells time accurately is sufficient. It can be your iPhone, Android, computer, radio controlled clock, or anything that you know won't deviate.

Write down today's date. For the Position tab, you'll write "Fully Wound". For the Time tab, fill in the exact hour and minute you set the watch to. For the State of Watch tab, put in the time you set the watch to as that is the current time your watch is displaying. You will revisit the watch at the exact time each day. So far your log should look something like this.

DATE	POSITION	TIME	STATE OF WATCH	DIFFERENCE IN MINUTES PER DAY COMPARED TO THE DAY BEFORE
02/10	Fully Wound	10:05AM	10:05AM	N/A

NOTE: Please do not set the time to another mechanical watch. There's too many variables that can go wrong. Whatever you use to set your watch to will be your controlled time. This way you can fact-check whether your watch is actually gaining/losing time.

2. LAY IT DOWN WITH THE DIAL FACING UP

After your watch is set and you input everything for Day 0, lay it down with the dial of the watch facing up. In the watchmaking world, we call this position "Dial Up". Please see the image on the right for reference. Leave it like this for 24 hours. This will officially begin the quality control process for Day 0.

Why would we test this position called Dial Up? Because it's one of the common positions people leave their watches in when they take off their watch. Most people take off their watch and leave their watches with the dial facing up on the countertop. This is one of the reasons why we test this position.

3. DAY 1 - CHECK TIMING AND DATE JUMP

At exactly 24 hours after Day 0, check your watch at the controlled time you input. The watch will either be running on time, fast, or slow compared to the controlled time. Write down the exact time it says on your watch on the State of Watch tab. Hours and minutes. Check the calendar date to see if it's on the correct date.

So far Day 1 of our quality control check confirms 2 things. The watch is either on time, fast, or slow and whether or not the calendar date system works. Let's say for example, I checked my watch at 10:05AM and my watch says 10:06AM. I will input 10:06AM for State of Watch tab. My watch gained +1 minute from the initial controlled time so I will input +1 for the Differences in Minutes tab.

Your current log should look something like this:

DATE	POSITION	TIME	STATE OF WATCH	DIFFERENCE IN MINUTES PER DAY COMPARED TO THE DAY BEFORE
02/10	Fully Wound	10:05AM	10:05AM	N/A
02/11	Dial Up	**The time you checked the watch. It should always be the same.** EX: 10:05AM	**Input the time it says on your watch** EX: 10:06AM	**Compared to the original time you jotted dow yesterday, how many minutes is the watch gaining/losing?** EX: +1

Here are just some of the checks we can tell just from Day 1 of our quality control process:

- **If your watch is completely off time** by more than 5 minutes fast or slow, there's something wrong. The watch should not deviate more than 5 minutes in a 24 hour time frame. Not that 5 minutes is acceptable or anything…
- **If the watch stops**, there could be something wrong with the power reserve. Since the watch was stationary the entire time during this check, we ruled out loose parts floating around in the case that could have stopped the balance. This helps us point the finger at the power reserve (possibly barrel or mainspring issue)
- **If the calendar date didn't change and remained the same date**, there is something wrong on the dial side. Possibly a wheel was installed incorrectly or not meshing with the necessary wheels it needs to.
- **If the calendar date is stuck in between changing**, there's something wrong on the dial side. Possibly a spring isn't strong enough to move forward with the date jump and stalled. There could be something stuck in the parts. Lack of lubrication could also be causing additional friction for the date jump to not successfully complete itself.

4. PUT THE WATCH ON YOUR WRIST -SIMULATION ON WRIST TO CHECK AUTOMATIC SYSTEM

Now that you've input the details for Day 1, don't wind your watch. We want to check the automatic system to ensure that it's working. You will now put on your automatic watch and wear it for 24 hours.

Generally speaking, automatic watches should have about 48 hour power reserve. We fully wound it on Day 0 so by Day 1 when you check the watch, it should have 24 hours of power reserve left. When you put the watch on your wrist and wear it for the next 24 hours, the watch should wind back to full power reserve (assuming you're active enough). Yes, you will be wearing this to sleep.

Please remember, **do not manually wind the watch at all during this time.** You're checking the watch for the next 24 hours to ensure the automatic system is working. Be active and walk around. Try and get 10,000 steps in (for all my FitBit users out there). If you are active enough, the automatic system should fully wind your watch.

Why do we test an automatic watch by wearing it? One of the main features of an automatic watch is that it's "automatic" and "self-winding". We are checking this position because we need to ensure that the watch is automatically winding itself when you wear it. Otherwise, it's not an automatic anymore.

5. DAY 2 - IS IT STILL RUNNING? CHECK TIMING AND DATE JUMP

After you wear the watch for 24 hours, check the watch at the controlled time you initially input. Jot

down the hours and minutes in your log. For Day 2, we are trying to figure out if the automatic system worked which is why we didn't wind the watch up on Day 1 after 24 hours. Check the timing and whether or not the date is on the correct day.

If the watch is still running, we can effectively determine that the automatic system is indeed functioning. If the automatic system is not working efficiently or properly, the time on your watch should be off by a lot or not running at all.

Following along with my example, let's say I checked my watch at 10:05AM (my controlled time) and my watch says 10:03AM. I will input 10:03AM for the State of Watch tab. My watch loss 3 minutes on my wrist compared to yesterday's Dial Up position when the watch was just laying flat. Therefore I will put -3 for the Differences in Minutes tab.

So far, your log should look something like this:

DATE	POSITION	TIME	STATE OF WATCH	DIFFERENCE IN MINUTES PER DAY COMPARED TO THE DAY BEFORE
02/10	Fully Wound	10:05AM	10:05AM	N/A
02/11	Dial Up	10:05AM	10:06AM	+1
02/10	Simulation on Wrist	10:05AM	10:03AM	-3

Here are just some of the checks we can tell just from Day 2 of our quality control process:

- **If your watch is no longer running**, we can determine that the automatic system is not functioning as it should be. If it functioned the way it should have, the watch should still be running and at max power reserve.
- **If your watch is running but off time significantly**, we can determine that the automatic system does work but not at 100%. The automatic system had wound the watch but not enough. Check the automatic system for any endshake issues and rough meshing of the wheels.
- **If you felt a "helicopter effect" when wearing the watch**, we can determine that there may be an issue with the automatic system. The "helicopter effect" is when you feel the oscillating weight inside the watch spin very fast like a helicopter. It will feel like a mini turbine so it'll be really hard to miss it. Sometimes magnetized parts create a binding effect which can cause the "helicopter effect." Other times, the tension on a spring may be loose. Either way, if you feel something spinning ridiculously fast inside your watch when you're wearing it, I'd get it checked out.

6. PUT THE WATCH IN CROWN LEFT - CHECKING THE MOST USED POSITION

Go ahead and place your watch down so that the watch's 6 o'clock marker is pointing up to the sky and your 12 o'clock is pointing down to the ground. The 3 o'clock marker should be on the left hand side (your watch's crown should be pointing to the left) and the 9 o'clock should be on the right hand side. This is what we call in the watchmaking world "Crown Left."

Why do we test the watch in the Crown Left position? I find that Crown Left is a commonly used position. More so than Crown Down (the position your watch is in when your hands are down by your sides). I can already sense all the keyboard warriors attacking me about why we're not testing it in Crown Down instead.

Think about it like this. When you're on the computer, your watch is in the Crown Left position (assuming you're wearing it on your left hand). Many people spend hours at a time in this position. Unless you spend hours at a time walking, I don't see the need to retest Crown Down during a quality control check. Watchmakers would have already tested Crown Down in a 24 hour (half-wind) scenario so I wouldn't bother with observing that yet again.

Furthermore, Rolex also tests their watches in the Crown Left position during their quality control process.

We will leave it in the Crown Left position for the next 24 hours.

7. DAY 3 - HOW IS THE TIMING? FIND OUT AVERAGE SECONDS GAIN/LOSS OVER 24 HOUR PERIOD

After 24 hours has passed since you placed the watch in Crown Left, you'll proceed to jot all of the information down again. For Day 3, we want to check the timing, power reserve, and determine the average seconds gain or loss over a 24 hour time period.

Following along with my example, I check the watch at my controlled time of 10:05AM and it says 10:06AM. I will input 10:06AM in the State of Watch tab. My watch gained 3 minute compared to yesterday's time of 10:03AM in the Simulation on Wrist position. Therefore, I'll put +3 in the Differences in Minutes tab.

So far your log should look something like this:

DATE	POSITION	TIME	STATE OF WATCH	DIFFERENCE IN MINUTES PER DAY
02/10	Fully Wound	10:05AM	10:05AM	N/A
02/11	Dial Up	10:05AM	10:06AM	+1
02/12	Simulation on Wrist	10:05AM	10:03AM	-3
02/13	Crown Left	10:05AM	10:06AM	+3

Now is where the final fun begins. With the provided information, we can get a rough idea on the average seconds that your watch will gain or lose in a 24 hour time period without a timing machine.

DETERMINING AVG. SECONDS GAINED/LOSS OVER 24 HOURS

We get the sum of all 3 positions which is a total of +1. Second, we divide the sum by 3 to get the average. +1 divided by 3 is 0.3333. In this example, my watch on average gains 0.3333 seconds over a 24 hour time period in all 3 positions. We've tested the most common position we lay our watches down in. We've tested the watch by wearing it. We've tested the watch in the most commonly used position other than walking. Knowing that your watch gains 0.3333 seconds a day is a great tool. You know what position can cause your watch to gain or lose seconds in. Understanding your watch will go a long way.

	POSITION	TIME	STATE OF WATCH	DIFFERENCE IN MINUTES PER DAY COMPARED TO THE DAY BEFORE
02/10	Fully Wound	10:05AM	10:05AM	N/A
02/11	Dial Up	10:05AM	10:06AM	+1
02/12	Simulation on Wrist	10:05AM	10:03AM	-3
02/13	Crown Left	10:05AM	10:06AM	+3
			SUM OF ALL 3 POSITIONS	**+1**
			SUM DIVIDED BY 3	0.3333 seconds / 24 hour

What does the this chart tell us? Out of all 3 positions, we know which position the watch would gain or lose the most time in. All without the use of a timing machine. Having a base understanding of how your watch is doing will help keep you on top of things. If you know how many seconds your watch gains or loses in a position, you can take immediate action when it gains or loses more than it should.

Between wearing our watch for 24 hours, leaving our watch on the counter top with the dial up when we take off the watch, and in the most commonly used position (Crown Left), we also know the watch would vary on average 0.3333 seconds in a 24 hour time frame. That's a good observation to know.

Here are the things you know about your watch on the final day of quality control:

- **Average gain or loss in seconds over a 24 hour time period** should not exceed double digits. It should always remain a single digit. If it is +/- 10, your watch failed quality control. It is sufficient to say that the watch is not keeping time to modern standards. Ignore this if your watch is a vintage.
- **Power reserve should be 42 hours or more** if the watch made it through to Day 3. If the watch stopped at any point transitioning from Day 1 to 3, we can determine that automatic system is faulty. Your watch failed quality control. Either you were not active enough or the automatic system did not run efficiently enough to wind the watch fully.
- **Functioning date change** if the watch is on the correct date by Day 3. If there is something wrong with the date change, it will usually show up during the transition from Day 0 to Day 1. 3 days of date change is sufficient enough to determine that the date change is functioning correctly. If at any point the date is off, your watch failed quality control.
- **Position your watch gains or loses the most in**. Now you know what position to avoid or keep your watch in to facilitate a gain or loss in time.

A METHOD IS BETTER THAN NO METHOD

This quality control process that you can do at home lets you test your automatic watch in 3 common positions rather than just 1 (winding it and crossing your fingers).

The most common way a customer tells us that their watch is running fast/slow is by wearing

and comparing it throughout the day to their phone. This works. But it doesn't cover all the angles that their watches run in.

An example of how this common method is flawed is if your job requires you to be on a computer all day. Most of your time will be spent in Crown Left. You'll probably get up for a couple minutes at max to use the bathroom and other basic stuff. You're not assessing the different variables that could be accounted for if you were an active person.

On the opposite side of the spectrum, you could be very active while wearing your watch and never end up in a position like Dial Up and Crown Left. Maybe you use a watch winder at home and don't leave your watch in a dial up position when taking it off.

Doing this manual quality control test of 3 positions and calculating the sum and average allows you to assess the watch in a more surgical approach. At the end of the day, you can always bring your watch to an authorized watchmaker for him to test. This way you'll have a definitive answer.