ROTATE

WATCH KITS

Watchmaking Guide
Flagship Kit Edition

The Edison
The Galileo
The Wright

ROTATE
WATCH KITS

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Based on the PDF page number***

Visit our video tutorial at: https://youtu.be/V_paDnhvQNw

INCLUDED IN THE KIT

PARTS

Movement: Mechanical/hand-wound, 17 jewel,
6497 model movement
Hands
Case: Sapphire glass, stainless steel, 44mm diameter
22mm lug size, 12mm thickness
Straps: 22*20mm width, easy-open
spring bar, 12mm length
Dial: 0.4mm thick
Others: screws, center gear, watch stem, crown, tabs

TOOLS

Screwdriver
Magnifying glass (older kit versions)
Tweezers
Spring bar tool
Cutter
Glue
Gloves

Welcome to Rotate's assembly guide! We're so excited for you to get started building your watch.

Watchmaking is a careful and patient craft. To ensure an accurate and functional watch, please follow the below guidelines:

- Wear gloves at all times.
- Handle pieces with care and set them down gently.
- Take small steps to ensure you don't overcut , overturn, scratch, or smudge the pieces.
- Be patient and take your time. If you struggle, take a deep breathe and revisit it at a later time.

Tips: Use a wide table as your workspace. A higher surface helps by bringing the work closer to your eyes. Avoid working over carpet or rugs. Avoid caffeine consumption prior.

Most importantly, don't forget to enjoy the process! Watchmaking is a beautiful, dying craft. Take the time to learn about each piece, and how they contribute to a fully analog, mechanical watch!

For any struggles building your watch, we're here for you. Please email details and photos to: hello@rotatewatches.com.

LET'S GET STARTED!

Basic Anatomy of a Movement

How Movements Work

(In a Nutshell)

1. Mechanical movements receive power from both kinetic energy and winding the stem.
2. Energy is then stored in the mainspring (inside the watch).
3. The mainspring turns a series of gears, the last of which is connected to the escape wheel, which regulates the speed of the entire chain.
4. Each turn of the escape wheel moves the pallet fork, which causes the balance wheel to swing. This motion is the easiest way to tell if a movement is operational.
5. The balance wheel powers the watch hands. When tuning the movement for accuracy, the balance wheel's speed is adjusted.

A Brief History of Watchmaking

Forms of timekeeping have been in our history for thousands of years with sundials dating back to the 4th millennium BC in Ancient Egypt. Since then, we have come a long way in time-keeping. Now, we can easily keep track of time with the various devices inhabiting our lives. Due to this shift, one would think that clocks and watches would become near to obsolete. Yet, this is far from the truth. Although our devices have the capability to tell time, they do not provide the background of rich culture and artistry that is backed by clock and watchmaking.

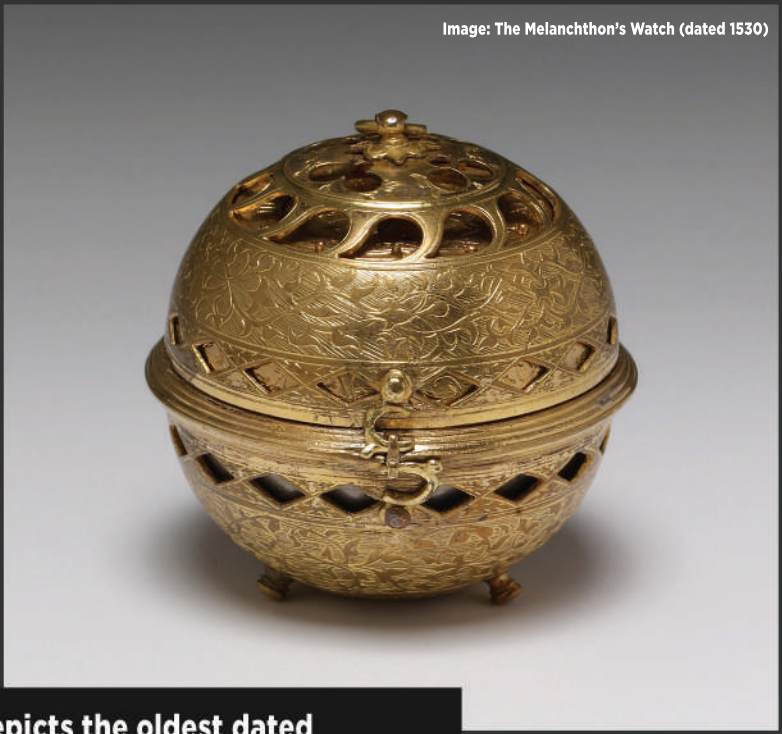


Image: The Melanchthon's Watch (dated 1530)

This image depicts the oldest dated watch on Earth created by German locksmith Peter Henlein. Although more than 500 years old, the basic mechanics of this watch still remains the same in mechanical watches today. In fact, Rotate's watches also use the same fundamental spring movement to make the wondrous piece of technology come to life. So as you dive deeper in the art of watchmaking through this kit, you are helping to keep the antique craft of watchmaking alive and appreciated.

The First Wristwatch

The first wristwatch was created in 1868 by the Swiss watch company Patek Philippe for Countess Koscowicz of Hungary. Although perfectly capable of telling time, wrist watches were created as women's jewelry and status symbols. Interestingly, even though it was common practice for men to carry around pocket watches, wrist watches did not catch on initially because of the femininity attached to it. It was only until the first world war that men started wearing wrist watches due to the practical value that it provided as a hands-free time-telling device.

Image: Courtesy of Patek Philippe

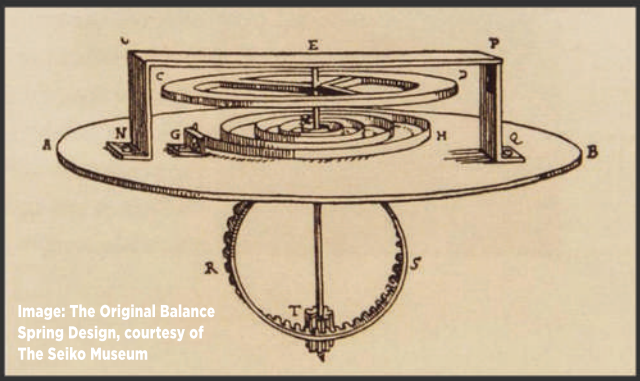


Image: The Original Balance Spring Design, courtesy of The Seiko Museum

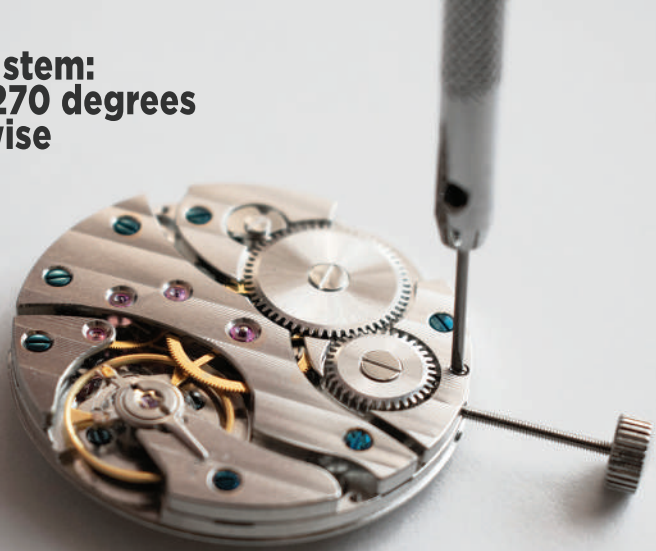
The Balance Spring

One of the most notable steps in timekeeping and watchmaking history is the invention of the balance spring commonly attributed to British physicist Robert Hooke and Dutch scientist Christiaan Huygens. This addition, in collaboration with the balance wheel, created a harmonious oscillator that ensured oscillation at a precise period, which increased accuracy of watches greatly. Thus, the balance spring shifted the role of pocket watches as decorative novelties to essential timekeepers.

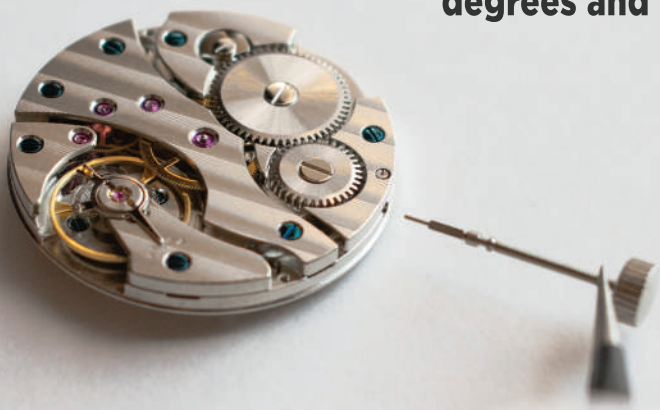
1. Remove the default hands with tweezers

Grip the hands with the tweezers close to the circular connector. Lift direct upwards, and the hand should slip off. Only the hand should lift off. No gears or other pieces should come up with the hand.

2. Take out the stem: Turn the stem 270 degrees counter-clockwise



Pull on the stem and if it doesn't come out, screw 30 degrees and try again.



CAUTION: DON'T OVERLOOSEN the screw or a part may come out on the other end. If a part falls out, slip it back into place gently (view FAQs on page 27 for details).

Only loosen the screw enough to pull the stem out. When re-tightening the screw in a later step, do not OVERTIGHTEN. This can also cause a piece to fall out. Only tighten enough to keep the stem in place. For pictures of the pieces that can fall out, refer to page 27.

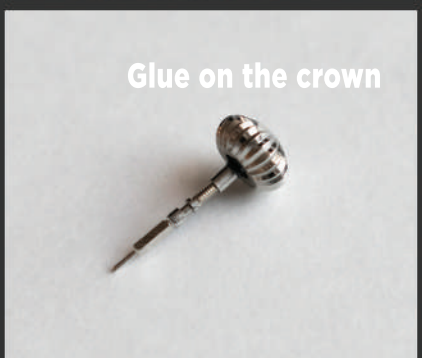
3. Case the movement
Align the stem hole of the movement to the 3 o'clock position.

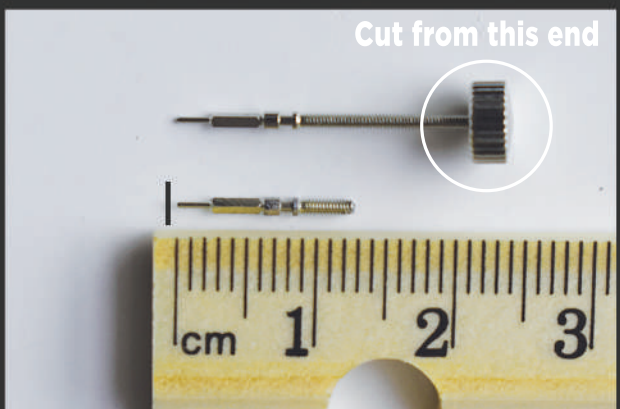
The movement can only be inserted from the top (front side) of the case. If attempted to be inserted from the bottom, the movement won't sit evenly. You may need to give the movement a small push.

4. Cut the stem and glue on the case's crown.

The length from the tip of the stem to the cut will be APPROX 13mm. Because the stem is already so small, we recommend making smaller cuts and taking a few trials for a perfect cut.

Cut from the CROWN end of the stem (do not cut off the end that goes in the movement).





Additional Suggested Instructions: Step 4

a. Cut about 1/3 of the stem off. Be careful not to lose the pieces as they may go flying after you cut.

b. Screw the crown onto the stem and push the stem in the movement. It can help to hold the stem with the pliers while using your other hand to screw the crown.

c. Measure the distance between the base of the crown and the movement (in the case). This distance X is what needs to be additionally cut off from the stem.

d. Take the stem out and unscrew the crown. Cut off X more from the end of the stem.

e. Repeat steps b-d until the crown is flush to the case.

f. Glue the crown to the stem and secure the stem in the movement. Don't glue until satisfied with the length!

CAUTION: Don't overcut! You can always cut more, but can't add more length.

We included cyanoacrylate glue in the kit. If you need to undo glue, soak the pieces in acetone (nail polish remover).

5. Insert the finished stem.

6. Re-tighten the stem screw

Make sure the crown is pushed in all the way during this step. Don't tighten too far, as this may cause pieces on the other side of the movement to pop off. Tighten up to where the stem pulls to the second outer position, but can't be easily pulled entirely out. Turn 30° at a time.

7. Lay down the case holder tabs over the corresponding holes. (Circled)

These tabs will be screwed down, securing the movement to the case.

The screws curve downward in a "∩" shape, not a "U" shape.

8. Screw down the case screws through the tabs.

Movement tabs are one of the hardest steps in the process, so don't feel discouraged by the challenge!

Since the tabs/screws are custom-made to fit the movement, they'll go in all the way. There may be some slight rattling that'll go away once the dial and casef ront are installed.

Trick 1: Use putty, tape, or a touch of glue to keep the tabs in place while screwing in

Trick 2: Add a small magnet or putty to the screwdriver to gain more control (always be cautious using magnets and use weak magnets so the watch's accuracy isn't affected)

For the rose gold case, you may prefer sanding down the movement tab so the color contrast between the silver and rose gold isn't noticeable.

If you find this step overly challenging, you can skip it for now, and complete it at the end. This step will be accessible through the case back of the watch.

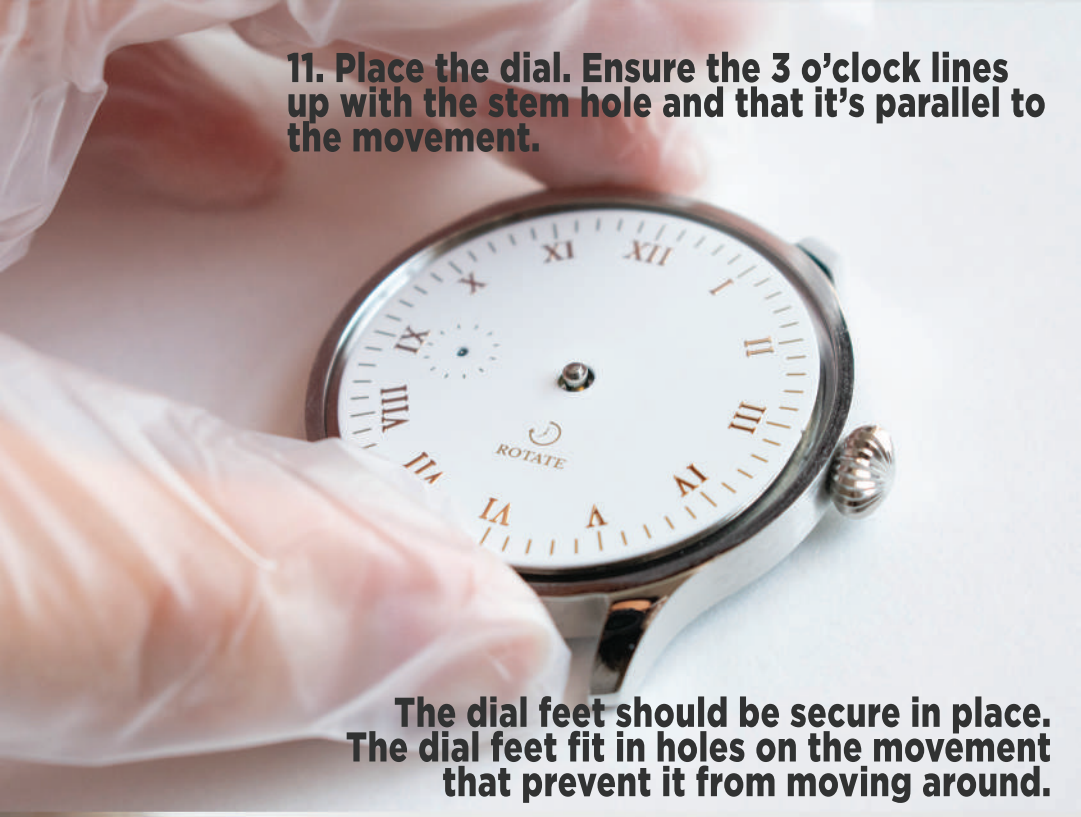
Recommended hand positioning: Place the tab down over the hole first, then hold the screw by the head with tweezers using your non-dominant hand. Using your dominant hand, hold the screwdriver and push the screw down into the hole with the screwdriver

Completed Case Holder Tabs/Screws

9. Place the center gear over the middle. Make sure the teeth of the center gear is locked in place with the other gears.

10. Place the gold washer over the center gear. The washer helps the dial sit in place properly.

11. Place the dial. Ensure the 3 o'clock lines up with the stem hole and that it's parallel to the movement.



The dial feet should be secure in place. The dial feet fit in holes on the movement that prevent it from moving around.

The dial scratches easily. Avoid dragging the tweezers through the dial. Do not clean the dial with alcohol, or the print comes off. Overall, a rule of thumb is to avoid touching the dial's front entirely.

12. Place the hour hand on. Be cautious not to push the hand down too hard onto the stem as it'll loosely spin in place. If this happens, gently pull the hand up to the proper position.

TIP: Cut a slit in a post-it note and put it over the dial prior to putting hands on to protect the dial from scratches!

13. Place the minute hand on.

14. Place the second hand on.

All the hands can be placed on with tweezers. Make sure not to bend the hands, and that once in place, they're pressed securely in place parallel to the dial. Once set, pull the stem into the outer position (to set time) and rotate the hands a few rotations to ensure they don't bump against each other and continue pointing at correct angles.

Place the hands at accurate angles to tell time during the hand steps. For example, align the hour hand to point directly at 2, and then set down the minute hand to point directly at 12

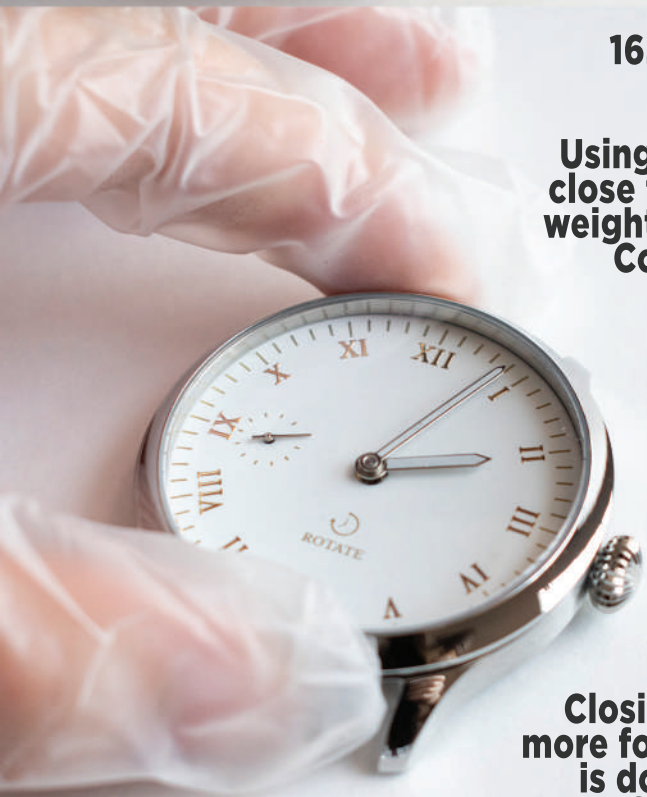
Tips For Hands

Trick 1: If you have Rodico putty, this can be used to set the hands down

Trick 2: Use the spring bar tool instead of the tweezers. Use the larger end for the minute/hour hand, and the smaller end for the second hand.

The hands will push into place. There won't be a click, and the hands should tick and stay on their perch.

15. Ensure the waterproofing rings are aligned on the top & bottom piece of the case.



16. Push the case front on.

Using the blunt of your hand, close the case with your body weight (helps to be standing). Complete this before step 18 if you are not using a case press tool.

While the case back is twisted in place, the case front is closed by pushing in.

Various methods to close the case are on the next page.

Closing the case may require more force than expected - this is done to obtain the 5 ATM waterproof rating in the end watch.

CAUTION: Don't break press down on the crown while closing the watch - the stem CAN break and get stuck inside.

Methods to close the case front:

- Close with your hands: Place a cloth underneath the case to protect it, align the waterproofing ring to the case, and use your weight and the base of your hand to push in. DON'T direct all pressure to the top of the glass. Try to evenly apply pressure on the perimeter. For newer case styles, you may have a GROOVE on the case front - align this groove with 3 o'clock (it also makes it easier to remove the case in the future).

- If you can't apply enough force with just hands, you can use a heavy surface as leverage. Place a cloth underneath the case to protect it. Align the case front into place, and place another thin cloth on top. Stack a small, dense object like rubber on top of that, and push down on the whole thing with a larger board.

- Another option is a case press tool, which essentially accomplishes the same thing as the previous option in a more convenient setup. It all boils down to applying even force to the case.

- Have your local watch repair shop assist: Local watch repair shops have case presses that can get the job done for a low cost - you won't need to get a case press and they can generally have it done in seconds as a last resort.

The case front can be re-opened with a dull knife. Insert the knife where the case front meets the case, and wedge up. Be careful! If you don't have a blunt knife, you can obtain a specific 'case opener' knife from our shop, commonly used by watchmakers and repair shops.

As an option, we offer case presses and case knives on our shop here: https://rotatewatches.com/shop.

More information on case presses and directions can be found on the next page!

IF USING A CASE PRESS:

DIRECTIONS: Screw a die on both the top and bottom of the press. The correct sized die will press on the rim of the case piece (NOT on the glass). Using a die that presses on the glass will cause the glass to break. For our kits, screw the case back onto the watch first, and then align the case front on top. Ensure the water-proofing ring is at no point obstructing the case from closing. Firmly and slowly press down with the case press. You'll feel as the case front goes into the case properly. Remove the case and check to make sure the case is evenly closed. Tip: You can also try flipping the watch upside down, swapping dies, and pressing it down for greater power!

Case Opener Knife pictured above. To use, wedge blade between the case pieces and pry open.

The die number for the best fit for the top (case front) is 46, and the die number for the bottom is 42.

17. Rotate the case back closed.

To ensure it's waterproof, use the larger end of the spring bar tool against the grooves of the case back to shut tightly.

18. Install the watch straps.

The straps in our kits have an easy-open tab: Simply pull the tab back to open the spring bar, and slip the bar in the case

Final Check

Since our movements are mechanical, they rely on both winding and kinetic energy. To test your movement, simply wind the watch a few twists, then move the movement around to mimic natural hand gestures. The seconds hand is the easiest indicator to tell if the movement is running.

To set the time, pop out the stem to the second position, configure the time, and pop the stem back into the first position. The first position is the correct default position for the watch to run.

Our movements have a power reserve of 40 hours when wound. In other words, wind every 40 hours. Mechanical movements also rely on the kinetic energy of everyday movement, so if it's idle for a while, make sure to adjust the time.

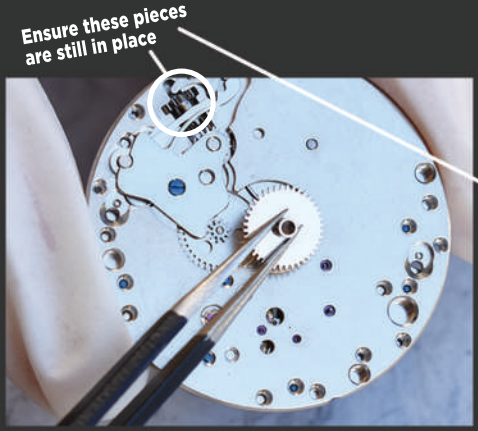
Tips on Maintaining the movement

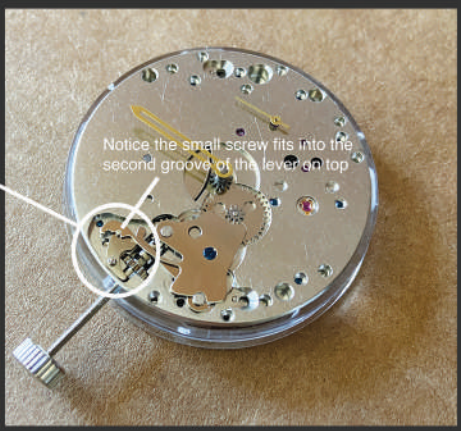
- Avoid extended exposure to direct sunlight
- Be cautious when using the watch underwater
- Every couple of months, clean the outside of the watch, ensuring to get grime off the straps and case.
- Avoid chemicals
- Avoid magnets
- If you open the watch again, be sure to use the same precautions as the beginning of this guide. Wear gloves, handle pieces with care, and work carefully.

FAQ & Troubleshooting

Q: The movement isn't ticking

A: All movements are double-checked before they're sent out to ensure the movements are properly ticking and moving accurately. If you discover the movement isn't ticking during the process, a part may have been dislodged or fallen out. Double check the following parts of the movement:





Make sure you're both winding and physically moving the movement to check for ticking. Mechanical watches rely on both winding and kinetic energy for the hands to tick.

Q: The movement stem won't switch between the two positions.

A: The stem should properly switch between the innermost position, & the slightly outward position. The innermost position is for the watch to run, and the outer position is to adjust the hands of the watch. If the watch won't go between the positions, check if the lever pictured above is still intact. This lever plays a direct interference with the positions. If the lever is no longer in place, email us: hello@rotatewatches.com.

FAQ & Troubleshooting

Q: I noticed the movement is running slightly slow/fast. How do I fix this?

A: The movement's callibration may be affected during assembly if the movement is dropped, or parts of the movement are touched that shouldn't be. To fix this, adjust the regulator on the back of the movement. Use a screwdriver (not your hands), and gently push about 1mm at a time. Test it out, and adjust if needed. Pushing the lever towards + will speed up the time, and pushing the lever towards - will slow it down.

Q: Which way should the movement tabs slope?

A: The movement tabs should slope downwards.

Q: When removing the default hands, the seconds hand came up with a stem. Is this normal?

A: Yes, the minute/hour hands will come off flat, and the seconds hand has a little stem that'll perch onto a needle in the seconds hand hole.

FAQ & Troubleshooting

Q: A gear fell out during step 2. How do I put it back?

A: Luckily, this piece can be easily slipped back into place. Remove the stem from the movement, slip it back into the space (circled below), and then reinsert the stem (it'll go through the gear). Then try winding the stem. The gear train should move. The gear only goes in one way, so if it doesn't go in the first time, try flipping it around.

The gear falling out is caused by overloosening the stem screw in Step 2.

On the opposite end, overtightening causes the traced piece (left) to fall out.

If you overtighten and the above piece falls out, try to locate the small screw that held it in place immediately. It's a difficult piece to get back in place, so please email us: hello@rotatewatches.com.

FAQ & Troubleshooting

Q: The hands won't go on the movement / seems like there's something blocking the hands

A: Once again, check for the pieces on the previous page. All movements are checked before they leave our warehouses, any defects may be from some small pieces being knocked out of place.

Q: Not sure if the dial is secure

A: The dial has small protrusions on the bottom (dial feet) that are custom made to fit into the holes in the movement. Once the dial is secure, it should not move or rotate around on the movement, and the dial feet should be fitting in the movement.

Q: The movement rattles in the case despite the tabs and screws being installed

A: Ensure the screws were screwed down all the way, and that the grooves in the case holder tabs are facing the same way. The screws are able to be screwed completely down in the case, as they go out the other end of the movement (it's not a hole with a dead end). A slight gap after the tabs are installed is NORMAL and will go away once the dial and case front are installed. Refer to this video demonstrating a watch with the dial & case front and no rattle: https://youtu.be/AHCmxJE10Vs

Q: The case front shattered when I was pushing it on

A: To prevent this from happening, be gentle while closing the case and don't use a very hard object like concrete or stone. If it breaks, let us know: hello@rotatewatches.com.

FAQ & Troubleshooting

Q: How do I reopen the case after shutting it?
A: A demonstration video opening our cases can be viewed here: https://youtu.be/yg_Plm2loug

Q: What should I use as my worksurface?
A: You'll want to use a lint free, grippy surface that'll provide contrast with the watch parts. One example of a proper surface is the top-most foam layer that comes with our kit!

Q: Which way should the case holder tabs be inserted?
A: With the jewel side of the movement facing up, the tabs will curve downward in a "∩" shape (NOT in a "U" shape).

Q: How close should the crown be to the case once it's been attached to the stem?
A: The crown should be completely flush to the case (refer to below picture).

Warranty Information

Thank you for your interest in Rotate Watches' Watch Kits! This warranty applies to all watch kits purchased from Rotate Watches.

What does the warranty cover?
The warranty will replace all damaged parts EXCLUDING the movement and case pieces free-of-charge if proof of damage is received. Please send photos/videos to hello@rotatewatches.com with the part/tool name and color (if applicable).

The warranty also partially covers movements and case pieces, including the movement, stem, case front, case middle, case back, and crown. If any component is damaged by the customer, we can offer factory prices for those pieces.**
Please email us photos/videos of the damage to hello@rotatewatches.com. We'll attempt to help repair the damage with you, but if unsuccessful, we can supply a discount code for the factory price.

To obtain warranty service, you must first contact us to determine the problem and the best solution for you: hello@rotatewatches.com.

****The movement pieces (movement + stem) come in a set. If the stem needs replacement, a new set (movement + stem) will be sent.**

CONGRATULATIONS, YOU JUST ASSEMBLED A WATCH!

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We're constantly seeking feedback, testimonials, and pictures! Please email all of the above to us: hello@rotatewatches.com.

If you enjoyed the kit, the easiest way to help out is to share us on social media! Instagram/Facebook/Twitter @rotatewatches

Thank you for the support!