

## Servicing a Poljot 3133 movement

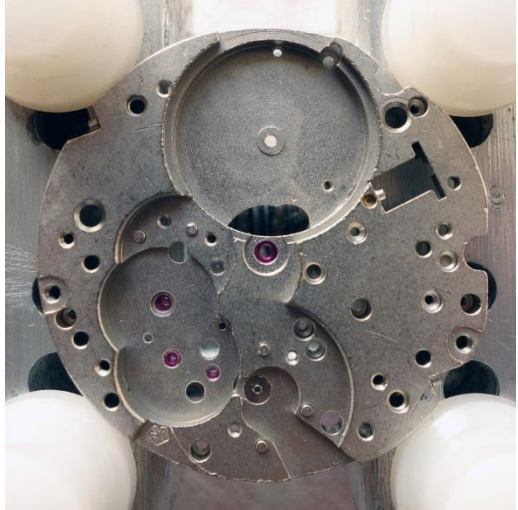
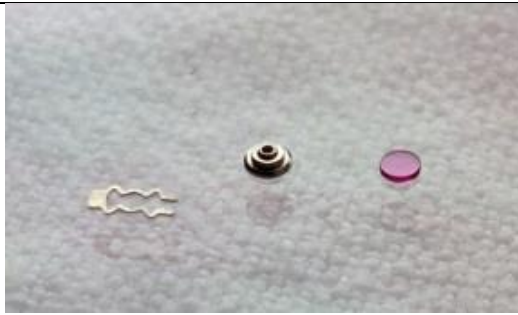


A service guide made by WUS member SLLS, June 2015

Editor: WUS member Polmax3133

Use this guide at your own risk.

To dismantle a 3133 movement, just start at the end of this document and work your way up to the start.

This movement is cleaned using a ultra-sonic cleaner. Clean the complete balance and the jewel of step 2 separately.

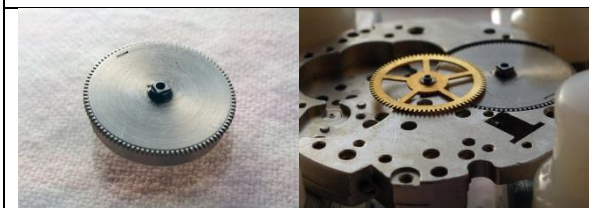
	<p><b>Step 1</b></p> <p>100: Plate</p> <p>The numbers before a part are the Swiss watch part numbers.</p> <p>Used oils are Moebius 9010, 9020, 9415, 8300, D5 and Bergeon KT-22. Oil pens 2mm and 3mm (Bergeon red and blue).</p> <p>With the base plate we start building up the 3133 movement, and start with assembling the Incabloc jewels followed by the wheel train of the movement.</p> <p>Like to know more about the wheel train? Check the following page: <a href="http://en.wikipedia.org/wiki/Wheel_train">http://en.wikipedia.org/wiki/Wheel_train</a></p>
  	<p><b>Step 2</b></p> <p>Pierced Jewel and Bezel Jewel cap Jewel spring Oil: Moebius 9010</p> <p>Putting back the jewels for the balance pivots is a delicate job.</p> <p>The jewel has a flat and a domed side. You need a strong magnifier to see it. Install the metal bezel with pierced jewel into the plate bloc and insert the cap jewel on top of the bezel with the domed side up.</p> <p>Install the spring which holds the jewel assembly onto the bloc.</p> <p>With retaining spring attached, be sure that the cap jewel is perfectly parallel with the bezel/pierced jewel, and then align the jewel bezel from the shaft side of the plate so that it is centered within the bloc and the pieced jewel is perfectly perpendicular to the balance axis.</p> <p>Add just a tiny drop of Moebius 9010 through the center of the bezel shaft and pierced jewel. Do not touch the shaft with oil.</p> <p>Repeat with the jewel assembly on the balance cock or do it at step 18.</p>



### Step 3

206: Centre wheel  
245: Cannon pinion  
Oil: Moebius D5

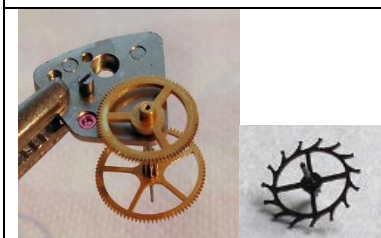
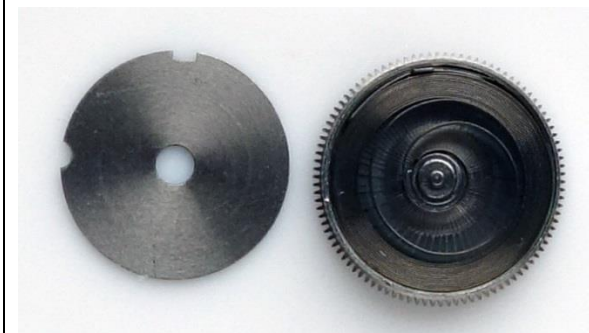
Oil the small gear of the centre wheel with D5, put the centre wheel in position, oil the jewel with D5 and add the cannon pinion.



### Step 4

182: Barrel and cover  
195: Barrel arbor  
770: Mainspring (1.60 x 12.5 x 0.13 x 430mm)  
Oil: Moebius 8300 and D5

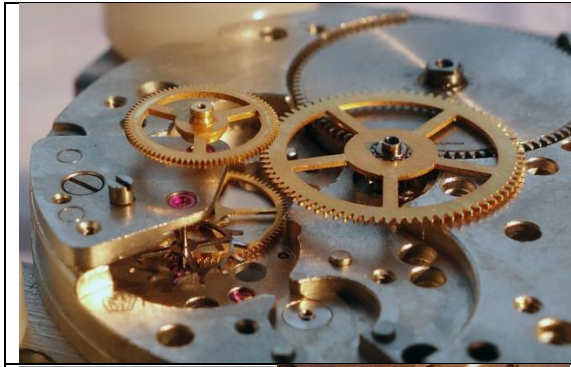
The complete mainspring exists of 3 accessories, here already put together. You can remove the cover with a little screwdriver and carefully remove the mainspring. Use Moebius 8300 for the mainspring and put it back in place (clockwise). Note the lug at the end of the mainspring. It should fall into the recess of both the barrel and cover.  
Put D5 at the bottom side of the barrel arbor (round part is bottom, square part is top).



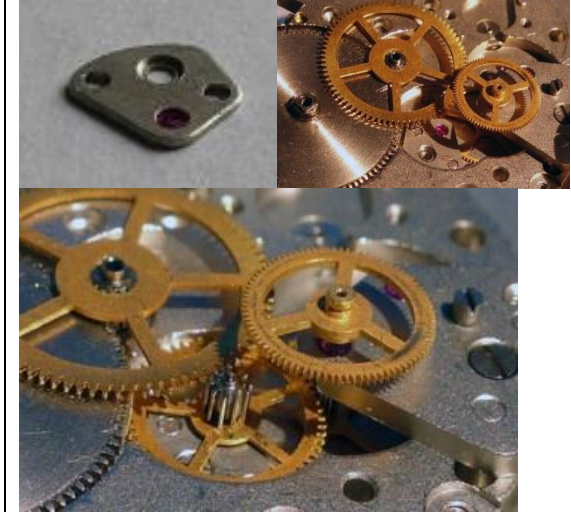
### Step 5

110: Train wheel bridge  
225: 4<sup>th</sup> wheel  
8060: Driving wheel  
705: Escape wheel  
Oil: Moebius 9010 and 9020

Take the train wheel bridge, oil the jewels for the 4<sup>th</sup> wheel with 9020, add the 4<sup>th</sup> wheel and put the driving wheel on the pivot. This avoids falling out the 4<sup>th</sup> wheel when putting the bridge on its place. Put 9010 on both jewels for the escape wheel. Put the escape wheel in the jewel on the plate and gently put the train



wheel bridge in place. Check continuously if the pivots of the wheels fall in the jewel holes correctly. Check if the gears run as they should and screw the bridge on the plate.



**Step 6**

210: 3<sup>th</sup> wheel  
 Plate for 3<sup>th</sup> wheel  
 Oil: Moebius 9020

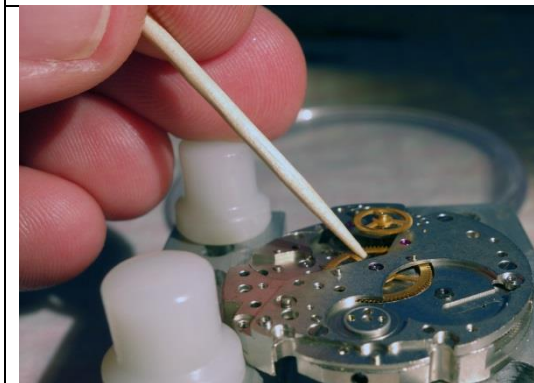
Screw the plate for the 3<sup>th</sup> wheel on the plate and oil the jewel with 9020. Add the 3<sup>th</sup> wheel.



**Step 7**

105: Barrel bridge  
 Oil: Moebius 9020


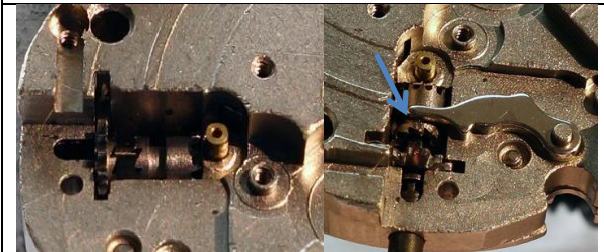
Gently put the barrel bridge on the plate with extra attention for the pivot of 3<sup>th</sup> wheel. Screw the barrel bridge (3 screws) and oil the jewels with 9020 (see arrows).

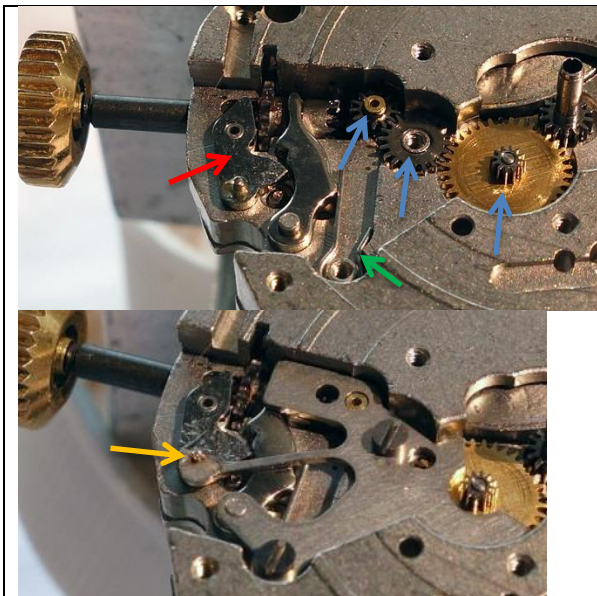


**Step 8**

Now it's time again to check if the wheel train works smoothly. Turn the centre wheel a bit.



	<p><b>Step 9</b></p> <p>425: Click 430: Click spring Oil: Moebius D5</p> <p>Put D5 where you add the click. Add the click and put the click spring in place (see arrow). Put your finger on the spring when you put in place.</p>
 <p>Note: when dismantling the movement, it's easy to overlook the ring (see arrow).</p>	<p><b>Step 10</b></p> <p>415: Ratchet wheel 420: Crown wheel 423: Crown wheel core Ring (inside crown wheel) Oil: Moebius D5</p> <p>These bolts can break off on older movements, so be careful if you decide to proceed with this step.</p> <p>Add the ratchet wheel, add the ring, then the crown wheel and screw the crown wheel core on top of it (2 screws).</p>
	<p><b>Step 11</b></p> <p>710: Jewelled pallet fork Pallet fork bridge Oil: Moebius 9010, 9415</p> <p>Oil the jewels for the pallet fork with 9010. Oil the pallet stones with 9415 (best) or 9010 (see arrows). Put the pallet fork in place, gently add the pallet fork bridge. If you move the driving wheel, the pallet fork should move smoothly too.</p> <p>The little hole under the end of the pallet fork is the jewel which we already oiled (see step 4). Don't oil it again or the balance will go to fast.</p>
	<p><b>Step 12 (adding the keyless work)</b></p> <p>401: Winding stem (and crown) 407: Clutch wheel 410: Winding pinion 435: Yoke Oil: Bergeon KT-22, Moebius D5</p> <p>Put the clutch wheel and winding pinion in place, add the winding stem. Put a little KT-22 on it. Oil the hole of the yoke with D5 and put the yoke in place. The end of the yoke falls into the groove of the clutch wheel (see arrow).</p>



### Step 13

260: Minute wheel  
 440: Yoke spring  
 443: Setting lever  
 445: Setting lever spring  
 450: Setting wheel  
 453: Additional setting wheel  
 Oil: Bergeon KT-22, Moebius D5

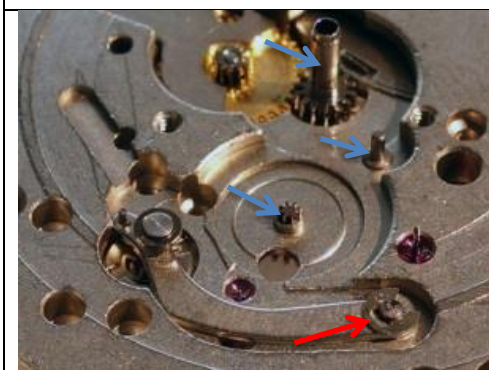
Put a little KT-22 under the 3 wheels and put them in place. First the minute wheel, then additional setting wheel and setting wheel (see blue arrows). Put the setting lever in place (see red arrow). Put the yoke spring in place (see green arrow). Hold your finger on it when you do that to avoid it flies away. Put the setting lever spring in place (2 screws). Check the position of the spring (see orange arrow)



### Step 14

Setting lever spring 2

Put the setting lever spring 2 in place.  
 Test the keyless work by pulling the crown out and wind it to see if the wheels move smoothly. Pull the crown in again.  
 If you turn the movement you see the stem unreleased button.  
 If you push it down, you can remove the winding stem.



### Step 15

255: Hour wheel  
 2556: Date indicator driving wheel (big)  
 2576: Date Jumper  
 2575: Date jumper spring  
 Date indicator driving wheel (small)  
 Oil: Moebius D5

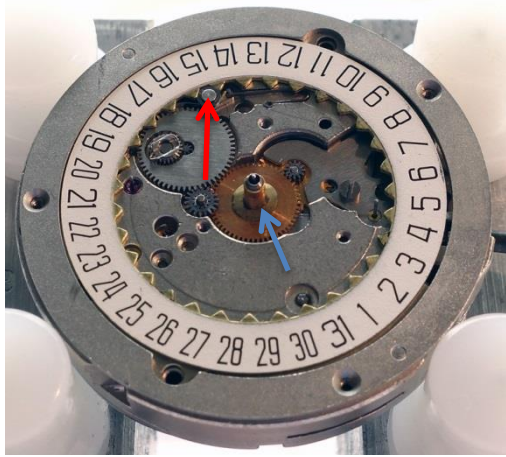
Put a little D5 where the date jumper is added at the plate. Then put the date jumper in place and mount it with the clamp (see red arrow).



Put a little D5 where you see the 3 blue arrows.  
 First put the hour wheel over Cannon pinion, then put the date indicator driving wheels (big and small) in place.

Now put the date jumper spring in place (see green arrow). Put your finger on it when you do so. Check if the spring keeps the date jumper in place (see blue arrow).



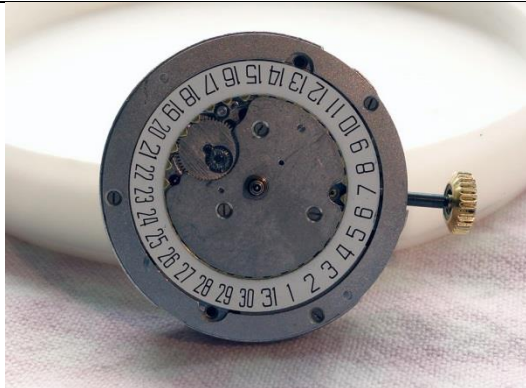


### Step 16

2557: Date wheel  
Thin slip ring

Add the date wheel. The end of the date jumper should fall in a notch of the date wheel. Be careful that the date jumper spring stays in the correct position.

Don't forget the thin slip ring (blue arrow).



### Step 17

2535: Date indicator Guard (plate)

Put the date indicator guard (plate) in position and add it with the 3 screws.

Pull out the crown and turn till you see the date jumping to the next number. Go back 3 or 4 turns and then forward again to see if the quick date setting works properly.



### Step 18

Complete balance (121: balance cock, 721: hair spring, 723: balance staff, 730: roller)  
8080: Coupling clutch  
8320: Coupling clutch spring

Remove the balance wheel/hairspring assembly from the balance cock (see green arrow for the screw).  
Put the balance wheel/hairspring assembly in a cleaning alcohol bath for 5 minutes. Then let it dry. Be very careful as this is one of the most fragile and valuable parts of the watch.

The balance cock also has a jewel. Dismantle and oil it (same as step 2).

Wind the mainspring a bit and check if the watch works. In fact the basis of the movement is ready.

If you have a Time Grapher, use it now to do some checks. The angle is  $51^\circ$ . Bate rate is 21600.  
The amplitude should be between 275 and 315 degrees. The beat error zero or at least close to zero.

Put the coupling clutch and coupling clutch spring in place.  
Check if the screw head is on the spring (see blue arrow).



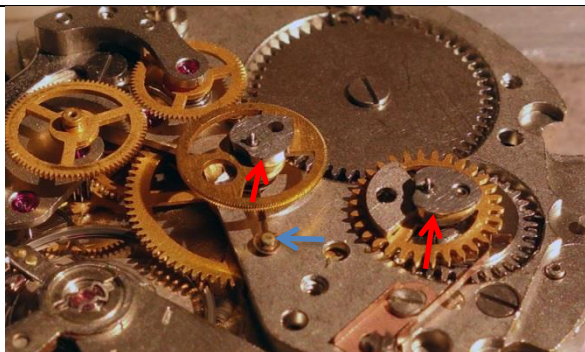


### Step 19

8020: Minute recording wheel  
8270: Minute recording jumper  
Oil: Moebius 9020

Put 9020 on the pivot of the minute recording wheel and put the wheel and jumper in place. Be careful with the jumper, it's very fragile. We shall adjust it later.

When dismantling the movement, it's better to let it stay where it is. If you use a cleaning machine, be sure nothing can touch the jumper. It breaks of very easy.



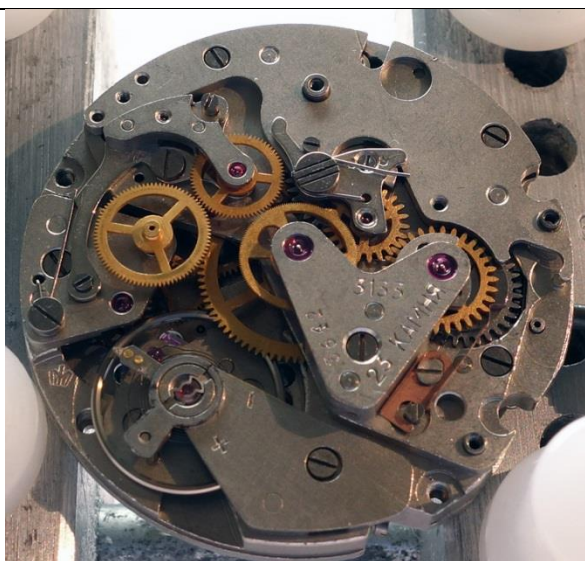
### Step 20

8000: Seconds recording wheel  
8290: Friction spring  
8500: Chronograph bridge  
Oil: Moebius 9020, D5

Put 9020 on the pivot of the seconds recording wheel. Put the friction spring in position (see blue arrow). Then put the seconds recording wheel in place (through the middle hole of the seconds recording wheel spring).

Put a little D5 on the edges of the heart-shaped parts of both wheels (see red arrows).

Put the chronograph bridge in place.



### Step 21

8281: Chronograph plate  
8100: Sliding gear  
8335: Blocking lever spring

Add the chronograph plate (2 screws).

Put the sliding gear in place and add the blocking lever spring. This is a counter clock wise screw (see 3 strips on the head of the screw).





### Step 22

8200: Blocking lever

Put the blocking lever in place and set blocking lever spring in the correct position (see arrow).

If you stop the chronograph, this lever blocks the seconds recording wheel.

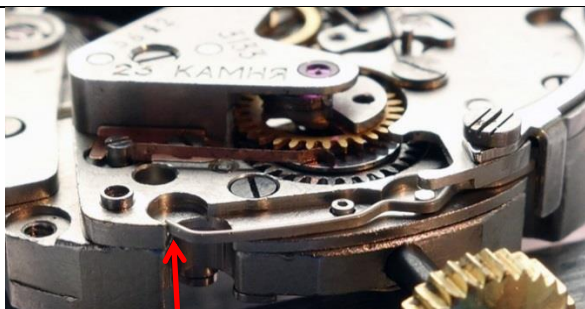


### Step 23

8180: Fly-back lever

Add the fly-back lever. The screw goes counter-clock wise when tighten it (see 3 strips on the head of the screw).

This lever hits the hammer (when in stop position) and resets the chronograph.



### Step 24

8335: Operating and fly-back lever spring

Put the spring in position. Be careful, the left side of the spring only hits the barrel bridge minimal.



### Step 25

8140: Operating lever

This spring should be lifted above the rivet for easier installation.

Add the operating lever. Check the position (see blue arrow). The hinge should look like picture 1. The moving parts are on one level, not on top of each other as is the case in picture 2.

Picture 1

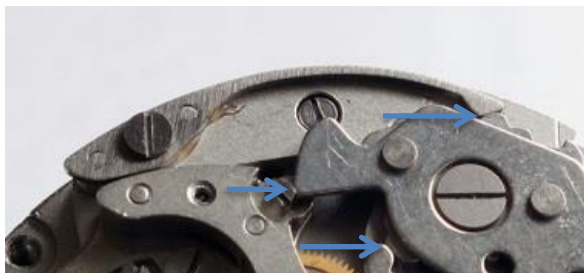


Picture 2



This lever hits the hammer to start or stop the chronograph.





### Step 26

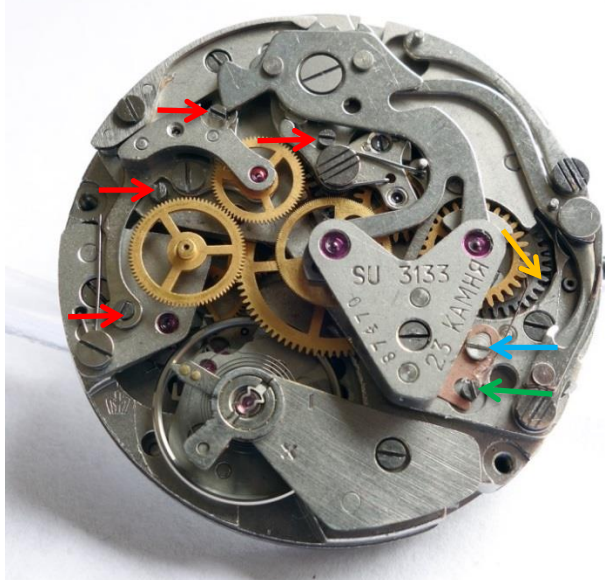
8220: Hammer

8356: Hammer cam jumper

For ease of fitting, install the reset hammer in the run position.

Add the hammer cam jumper and the hammer. When you add the hammer you need to move 3 parts a little bit to put the hammer in the correct position (see blue arrows).

### Step 27 (adjust chronograph)

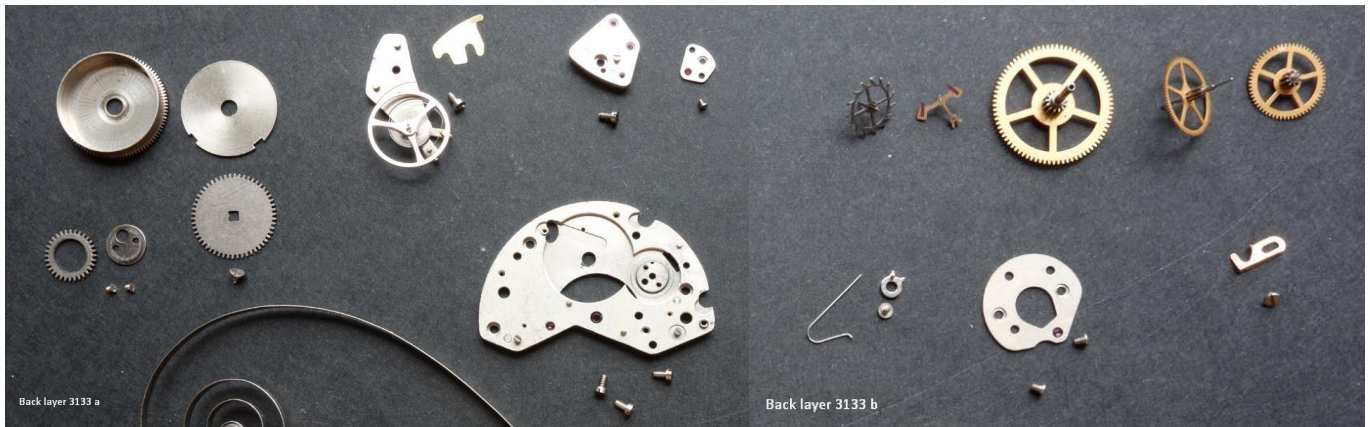


Now it's also time to adjust the minute recording jumper. Turn the screw with blue arrow one turn left. Turn the eccentric screw with the green arrow carefully left or right so that the end of the jumper falls in a notch of the gear (orange arrow). By turning the eccentric screw the minute recording jumper goes a bit up and down.

The following is not a simple task; adjusting the chronograph. Turning a screw (1,2, or 3) may cause in adjusting one of the other screws.

1. Adjust clockwise the 4 eccentric screws (red arrows). The 1<sup>st</sup> screw is to adjust how deep the coupling clutch wheel hits the driving wheel. It needs a little space between those wheels otherwise they stop running.
2. The 2<sup>nd</sup> screw determines how deep the coupling clutch wheel hits the seconds recording wheel. If the hammer is in normal position, those wheels are apart from each other. If the hammer is in the "chronograph running" position, both wheels hit each other. Again they should hit each other minimal.
3. The 3<sup>th</sup> screw should be adjusted in a way that the hammer works smoothly (start running, stop and reset) and the coupling clutch wheel is free from the seconds recording wheel in the stop and reset position of the hammer or hits the seconds recording wheel in the running position.
4. The last crew determines the depth of the sliding gear against the seconds recording wheel. It should be adjusted in a way that the seconds recording wheel hits one sprocket in a minimal way so that the sliding gear turns the minute recording wheel just one turn. An adjustment which is too deep causes a "hard" hit. The minute recording wheel turns directly when starting the chronograph and turns twice or even more.

## Back Layer



## Front Layer





## Chronograph Layer

