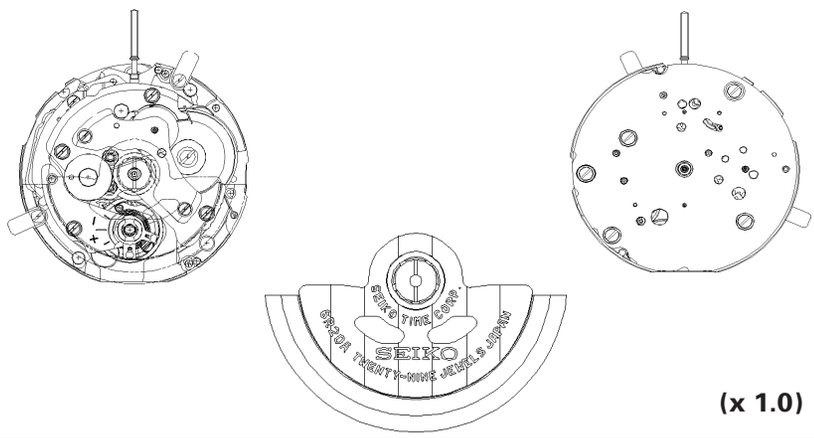
PARTS CATALOGUE/TECHNICAL GUIDE

Cal. 6R20A

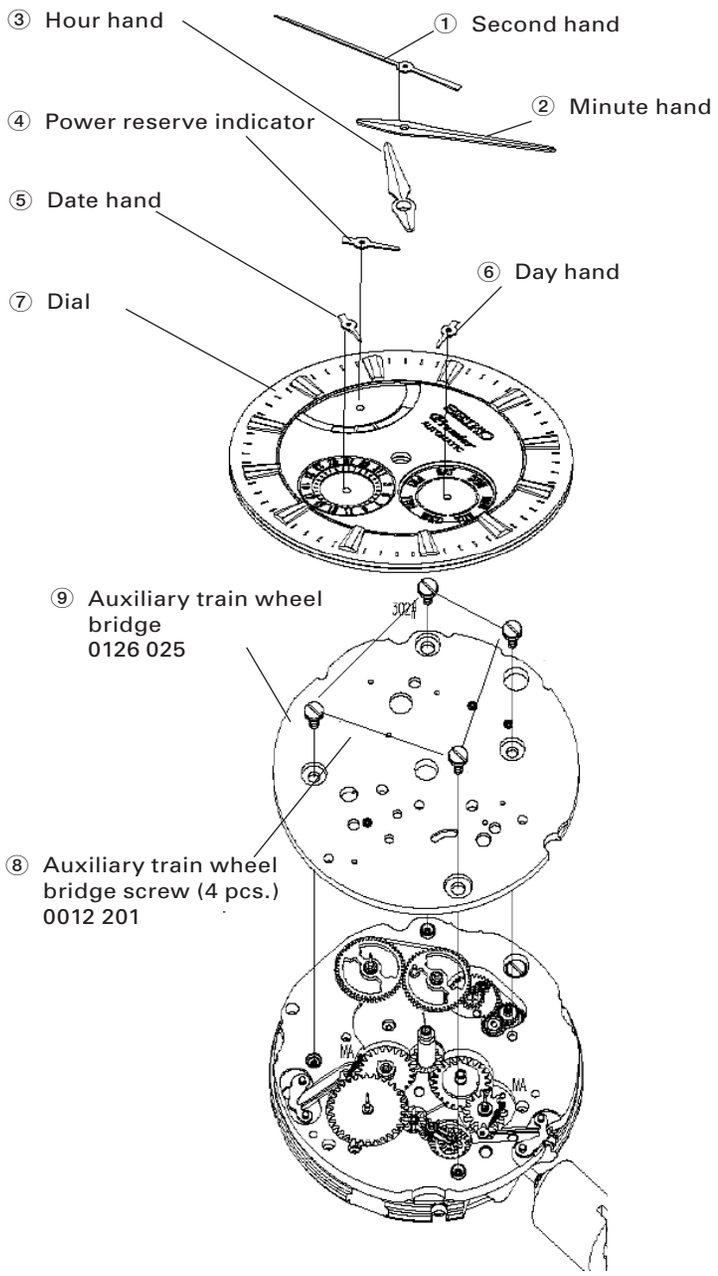
[SPECIFICATIONS]

Item \ Cal. No.		6R20A
Movement		 (x 1.0)
Movement size	Outside diameter	Ø 27.4 mm
	Casing diameter	Ø 27.0 mm
	Height	6.15 mm
Time indication		● 3 hands (hour, minute and second hands) ● Date/Day indication ● Power reserve indicator
Vibration per hour		28,800 Hz/hour (8 beats per second)
Basic mechanism		● Mechanical watch ● 3 hands ● Automatic winding with auxiliary hand winding mechanism
Additional mechanism		● Date hand, Day hand, and Power reserve indicator ● Date/Day correction function ● Second hand stop mechanism ● Clearance adjustment
Crown operation	Original	Manual winding (turn clockwise)
	First click	Date correction (turn counterclockwise)/Day correction (turn clockwise)
	Second click	Time setting (turn clockwise to move forward and counterclockwise to move back) Second hand stops on the spot
Loss/gain		Between -15 seconds and +25 seconds per day
Number of Jewels		29 jewels

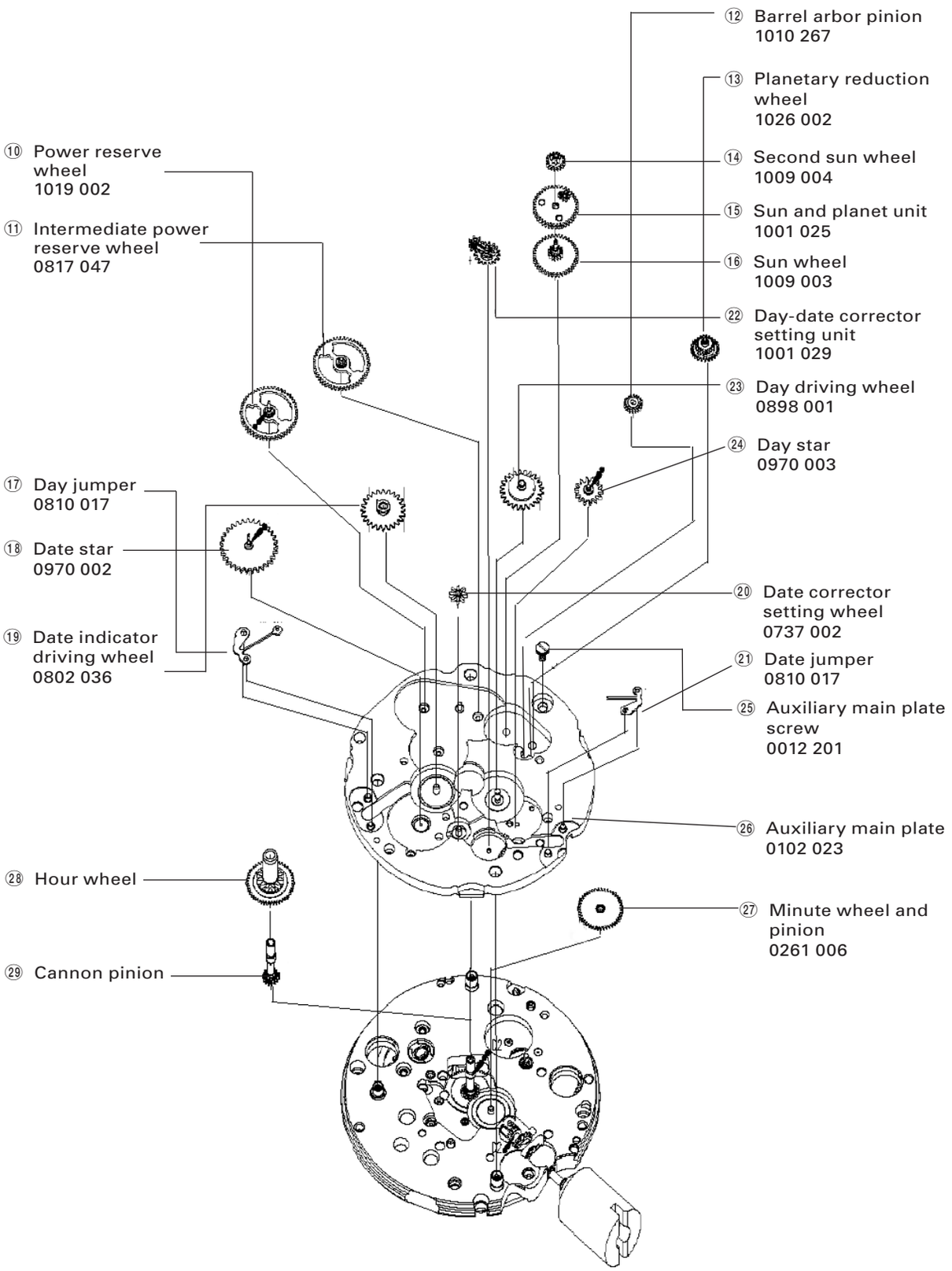
SEIKO WATCH CORPORATION

Disassembling procedures Figs.: ① → ⑯

Reassembling procedures Figs.: ⑯ → ①

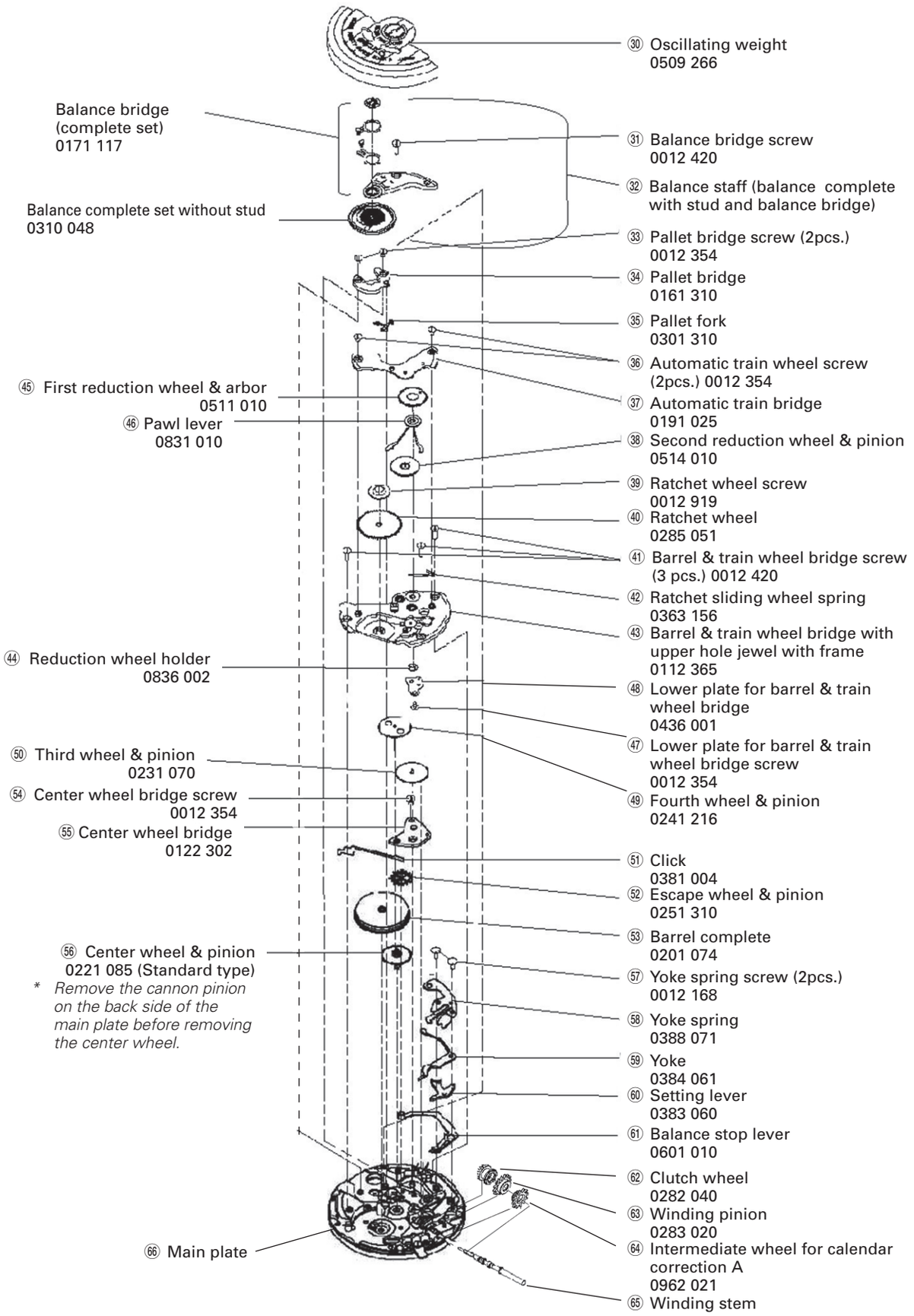


PARTS CATALOGUE



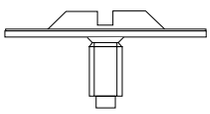
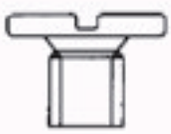
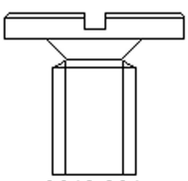
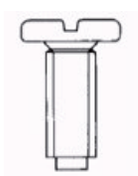
PARTS CATALOGUE

Cal. 6R20A



PARTS CATALOGUE

CROSS-SECTION VIEW OF THE SCREW PARTS

Parts code	Parts name
 0012 919	Ratchet wheel screw
 0012 354	Lower plate barrel & train wheel bridge screw Center wheel bridge screw Pallet bridge screw (2pcs.) Automatic train wheel screw (2pcs.) Date indicator maintaining plate screw A (3 pcs.)
 0012 201	Auxiliary main plate screw Auxiliary train wheel bridge screw (4 pcs)
 0012 168	Yoke spring screw (2pcs.)
 0012 420	Barrel & train wheel bridge screw (3 pcs.) Balance bridge screw
 0012 067	Casing clamp screw (2 pcs.)

Remarks

The correct parts for the following are determined based on the design of the cases.

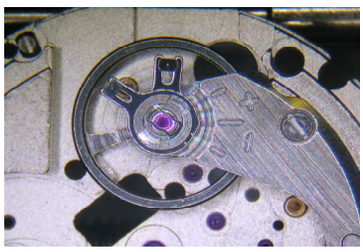
Refer to "SEIKO Watch Parts Catalogue (SEIKO WATCH SERVICE SITE)" to choose corresponding parts.

- Holding ring for dial
- Date indicator
- Winding stem

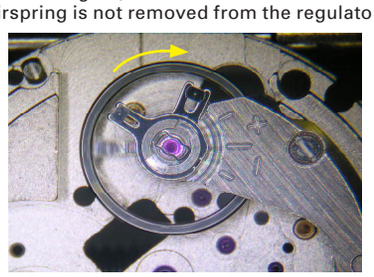
PREPARATION | HOW TO REMOVE AND INSTALL THE BALANCE STAFF

How to remove

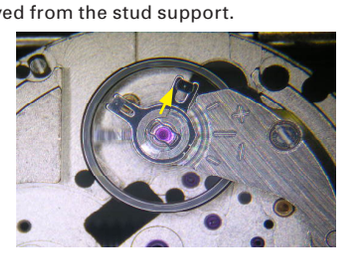
1. Initial phase
   Set the balance complete with stud and balance bridge to the main plate.

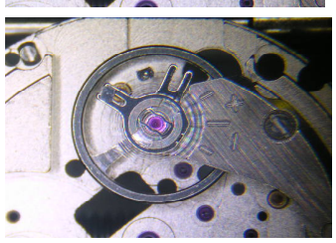


2. Move the stud support toward the balance bridge until it is attached to the balance bridge.
   * When doing so, make sure that the outer end of the hairspring is not removed from the regulator arm.

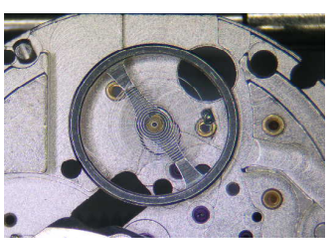


3. Using sturdy tweezers, push the stud outward from the direction of the arrow shown in the illustration until it is removed from the stud support.



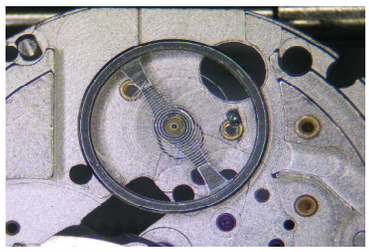


4. Remove the balance bridge and replace the balance complete with stud with a new one.

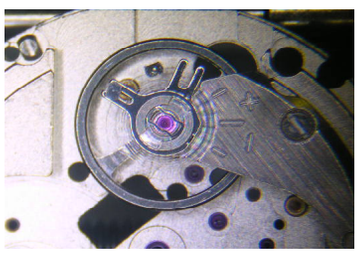


How to install

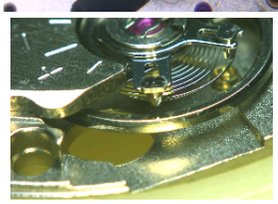
1. Initial phase
   Set a new balance complete with stud to the main plate.



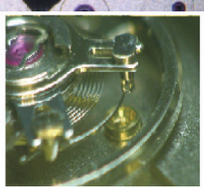
2. Set the balance bridge and tighten the balance bridge screw.



3. Temporarily set the stud to the stud support.
   Make sure that the hairspring passes outside the pin of the regulator arm.
   * Be careful not to damage the hairspring.

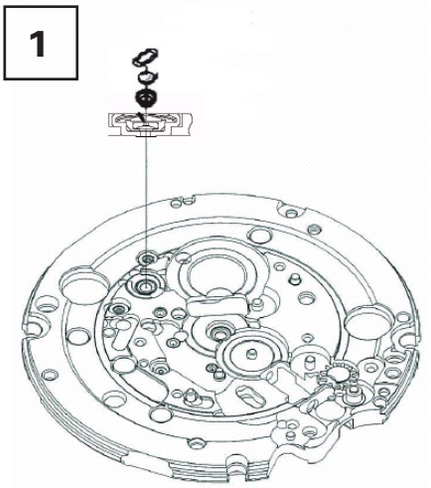


4. Using sturdy tweezers, set the stud to the stud support and press it down.
   Make sure that the outer end of the hairspring passes through the regulator slot of the regulator arm.
   * Be careful not to damage the hairspring.

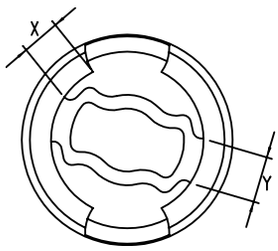


PREPARATION

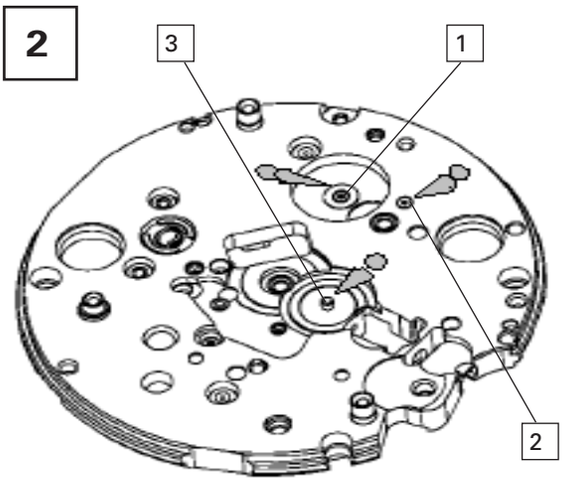
1



1. Lubricate the lower shock absorbing cap jewel, and set it to the lower hole jewel with frame.
   Type of oil: AO-3 (Moebius A)
2. Set the lower hole jewel with frame (with the cap jewel attached) to the main plate with lower shock absorbing frame.
3. Set the shock absorbing spring.



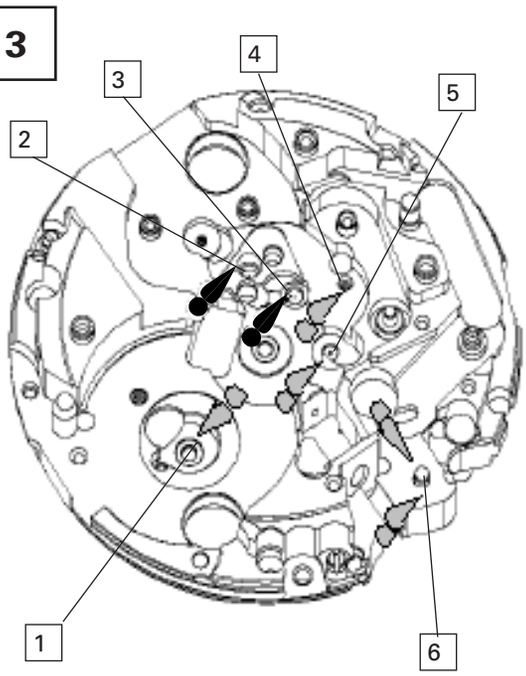
2



Lubricate at the three points on the rear of the main plate as illustrated.

1. Lower hole jewel for the minute wheel pin
   Type of oil: S-6
2. Lower hole jewel for the sun wheel
   Type of oil: S-6
3. Lower hole jewel for the planetary reduction wheel
   Type of oil: S-6

3

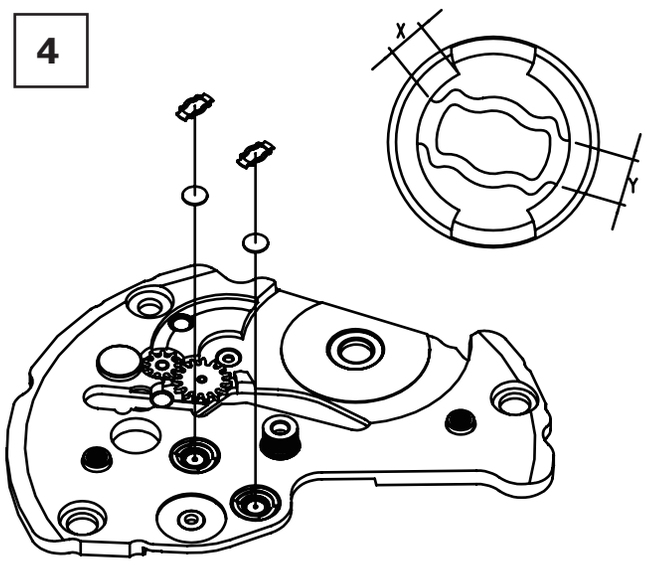


Lubricate at the six points on the surface of the main plate as illustrated.

1. Lower hole jewel for the barrel complete
   Type of oil: S-6
2. Lower hole jewel for the pallet fork.
   Type of oil: AO-3 (Moebius A)
3. Lower hole jewel for the escape wheel and pinion
   Type of oil: AO-3 (Moebius A)
4. Lower hole jewel for the first reduction wheel
   Type of oil: S-6
5. Lower hole jewel for the third wheel and pinion
   Type of oil: S-6
6. Setting lever pin and sliding face of setting lever
   Type of oil: S-6

PREPARATION

4



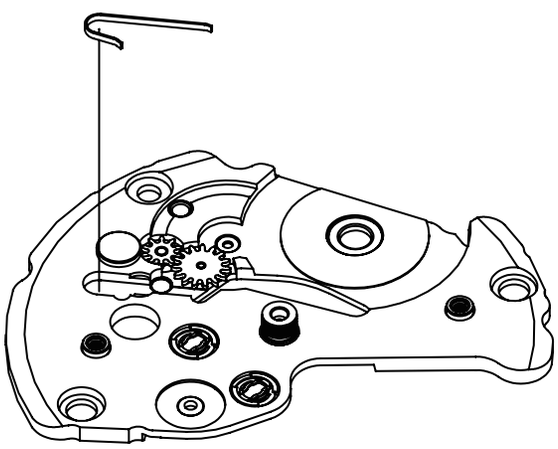
1. Lubricate the upper hole jewel for the third wheel bridge and set the upper hole jewel with frame. Then, set the upper shock absorbing spring for the third wheel bridge.

   Type of oil: AO-3 (Moebius A)

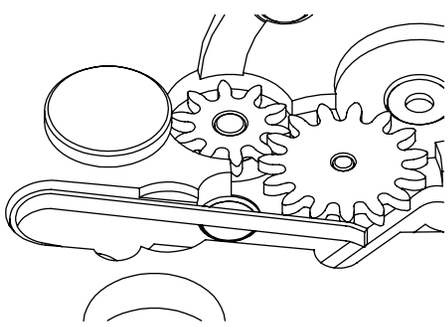
2. Lubricate the upper hole jewel for the escape wheel and pinion and set the upper hole jewel frame with frame. Then, set the upper shock absorbing spring for the escape wheel and pinion.

   Type of oil: AO-3 (Moebius A)

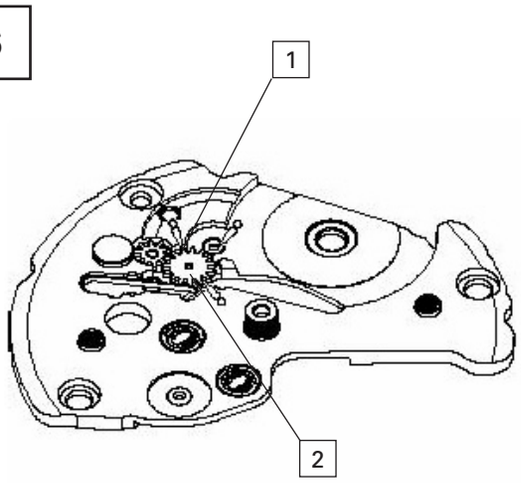
5



1. Set the rachet sliding wheel spring.

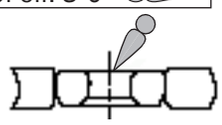


6



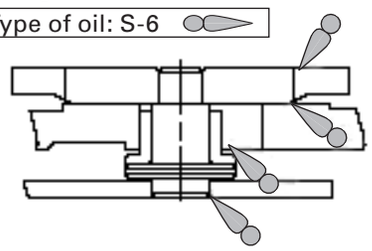
1. Lubricate the lower hole jewel for the second reduction wheel and pinion.

   Type of oil: S-6



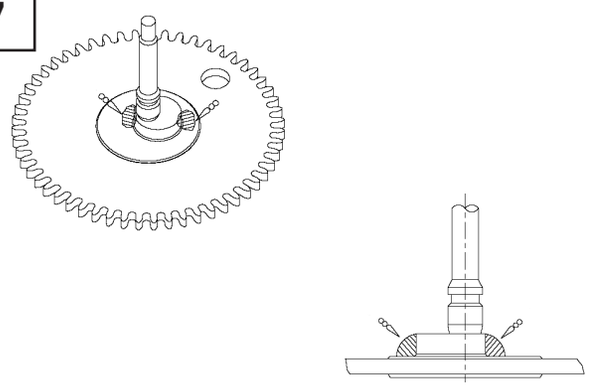
2. Lubricate at the two points in the rachet sliding wheel.

   Type of oil: S-6



PREPARATION

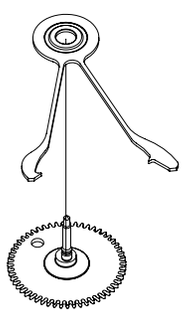
7



1. Lubricate at the two points in the point of contact between the magic lever and the first reduction wheel and arbor.

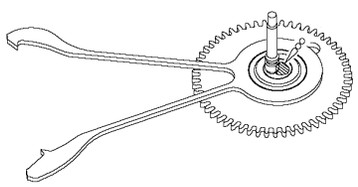
Type of oil: S-4 □<

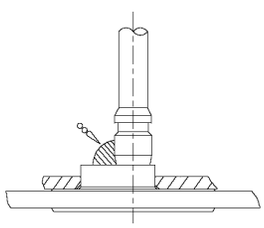
8



1. Set the magic lever to the first reduction wheel and arbor.

9

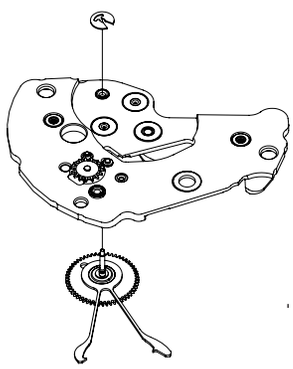


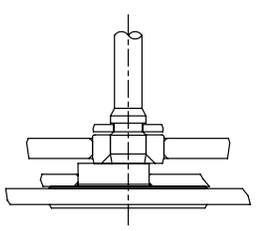


1. Lubricate at the arbor of the first reduction wheel and arbor.

Type of oil: S-4 □<

10

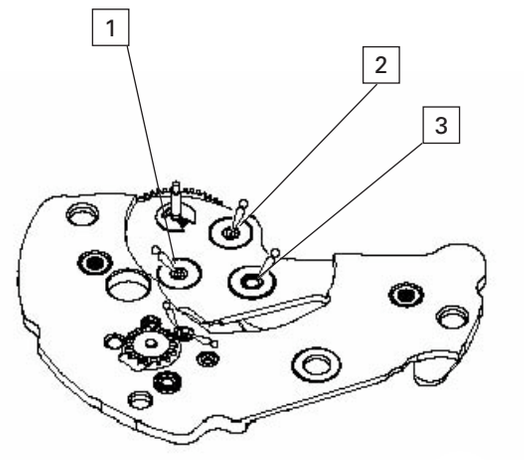




1. Set the first reduction wheel and arbor (with the magic lever attached) to the barrel and train wheel bridge.
2. Set the first reduction wheel and arbor lever.

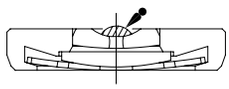
PREPARATION

11



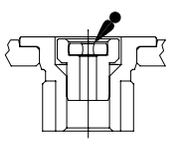
1,2. Lubricate the upper pivot hole jewel for the third wheel and pinion and fifth wheel and pinion.

Type of oil: AO-3 (Moebius A)

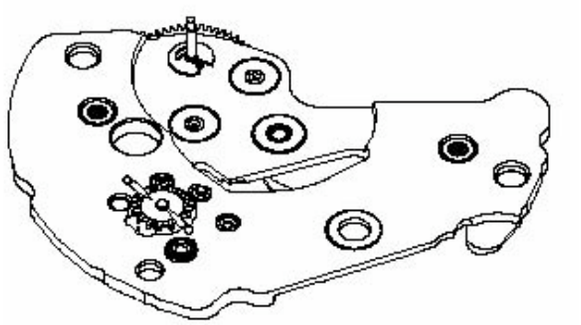


3. Lubricate the upper hole jewel for the forth wheel and pinion.

Type of oil: AO-3 (Moebius A)

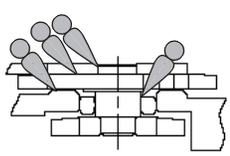


12

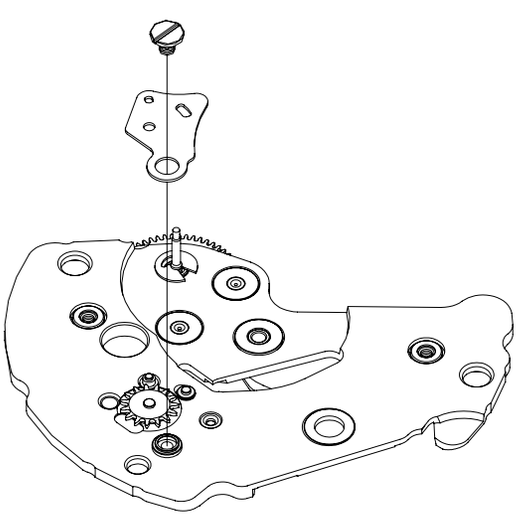


1. Lubricate at the four points in the crown wheel.

Type of oil: S-6



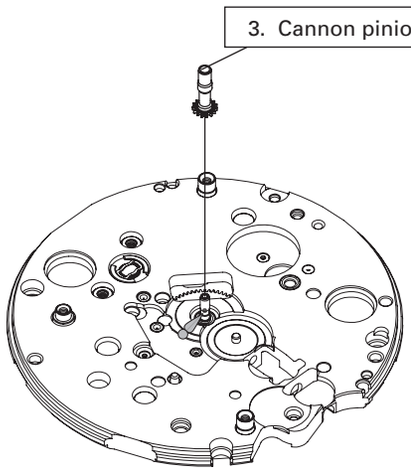
13



1. Set the lower plate for barrel and train wheel bridge.
2. Screw the lower plate for barrel and train wheel bridge.

REASSEMBLE THE MOVEMENT

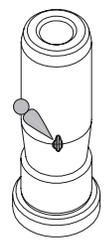
1



1. Set the center wheel on the front side.

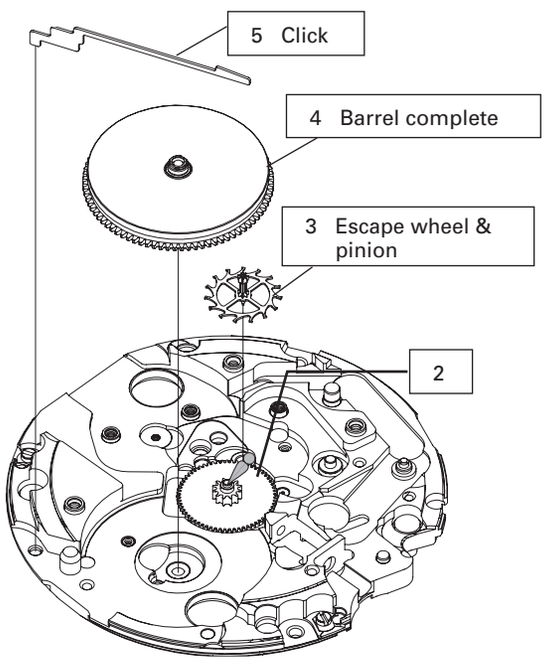
   Turn the main plate upside down.
2. Lubricate the point of contact between the center wheel and the cannon pinion as illustrated.

Type of oil: S-6



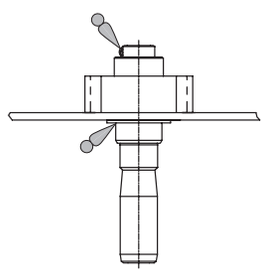
3. Set the cannon pinion to the center wheel.

2



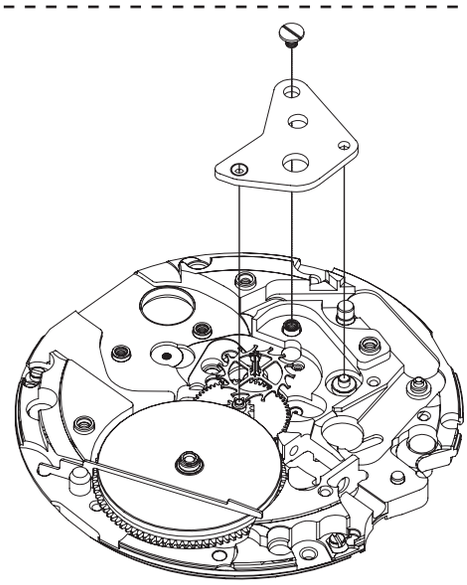
1. Turn the main plate upside down.
2. Lubricate the center wheel & pinion as illustrated.

Type of oil: S-6



3. Set the escape wheel & pinion.
4. Set the barrel complete.
5. Set the click.

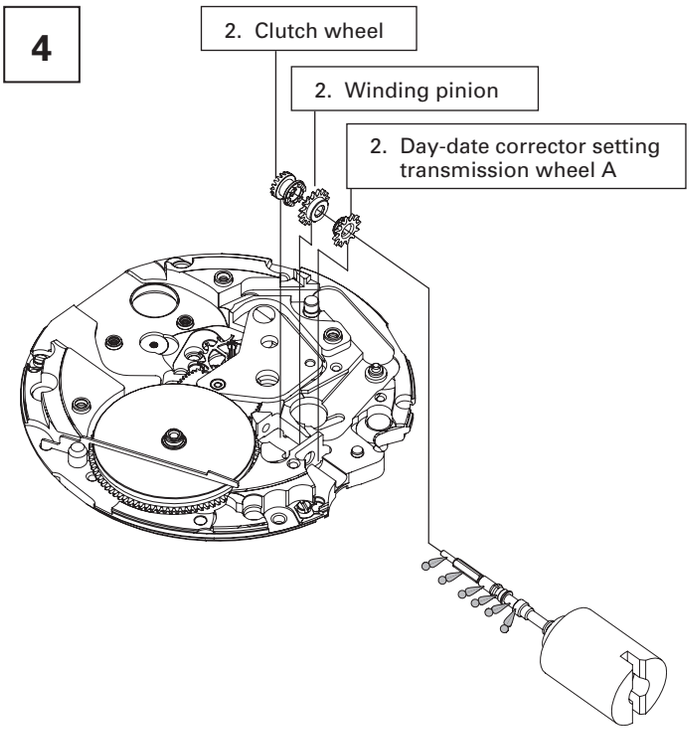
3



1. Set the center wheel bridge.
2. Tighten the center wheel bridge screws. (2 pcs.)
3. After tightening the center wheel bridge screws, make sure that there is adequate clearance for the center wheel.

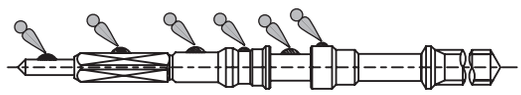
REASSEMBLE THE MOVEMENT

4



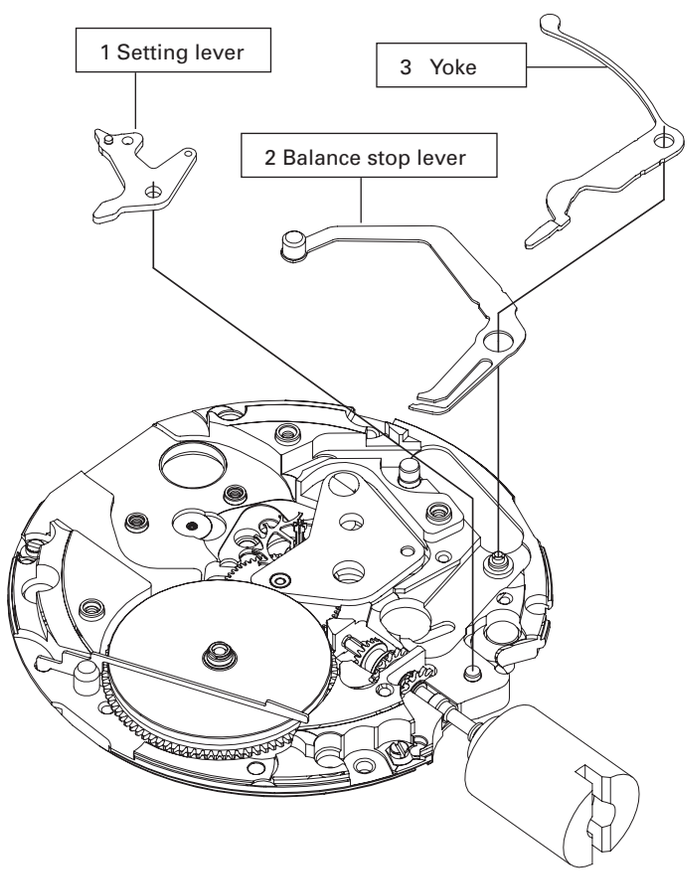
1. Lubricate the winding stem as illustrated.

Type of oil: S-6



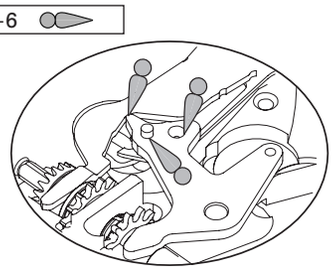
2. Set the winding stem to the main plate. While doing so, slide the clutch wheel, winding pinion and day-date corrector setting transmission wheel A on the shaft of the winding stem in the correct order shown in the illustration.

5



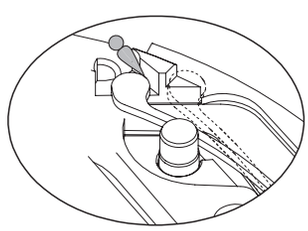
1. Lubricate the contact points between the upper and lower tubes of the setting lever and yoke, and then set the setting lever.

Type of oil: S-6



2. Set the balance stop lever.
3. Set the yoke.

* *Make sure that the yoke is correctly engaged with the setting lever as shown in the illustration.*

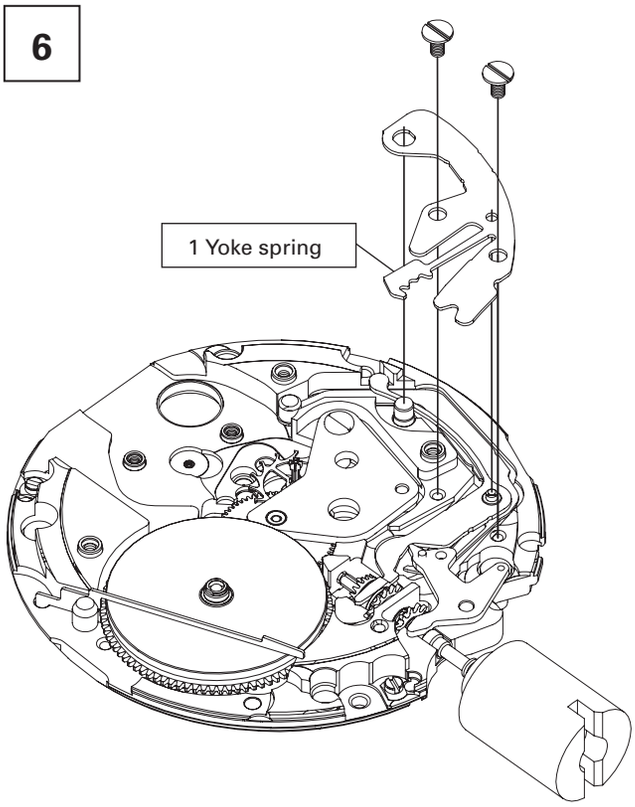


4. Lubricate the tail portion of the yoke.

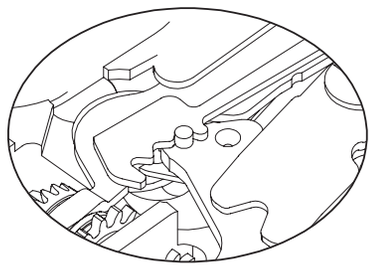
Type of oil: S-6

REASSEMBLE THE MOVEMENT

6

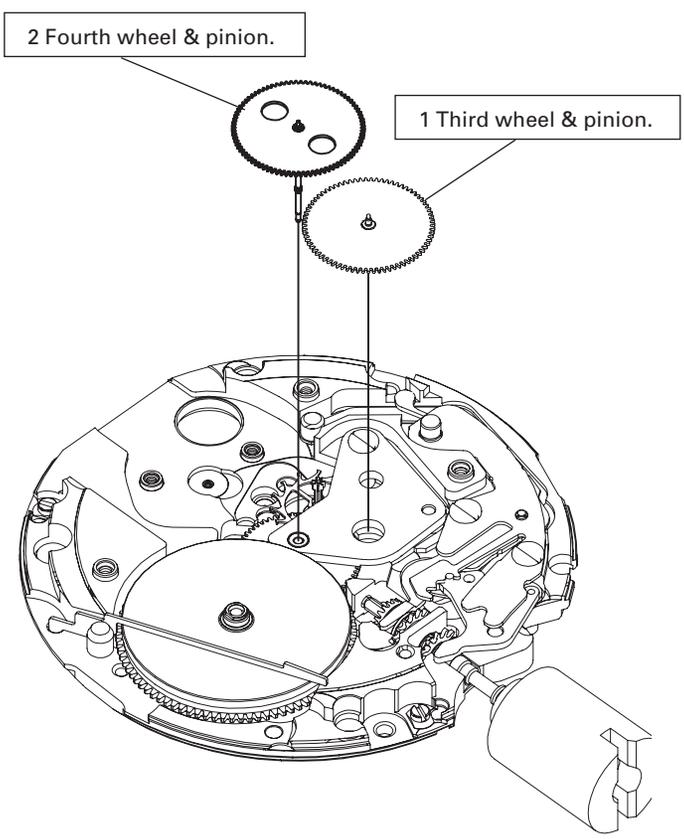


1. Set the yoke spring.
2. Tighten the yoke spring screws. (2 pcs.)
3. Securely engage the yoke over the pin of the setting lever.



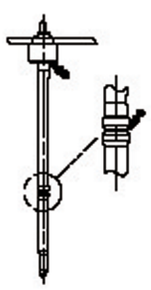
4. Try pulling out the winding stem to check that it can be done smoothly.

7



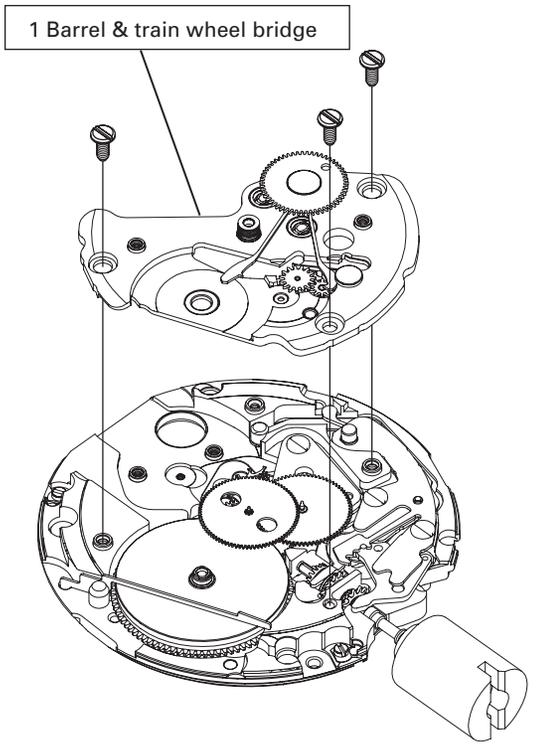
1. Set the third wheel & pinion.
2. Lubricate the convex part of the fourth wheel & pinion as illustrated, and then set it.

Type of oil: AO-3 (Moebius A)



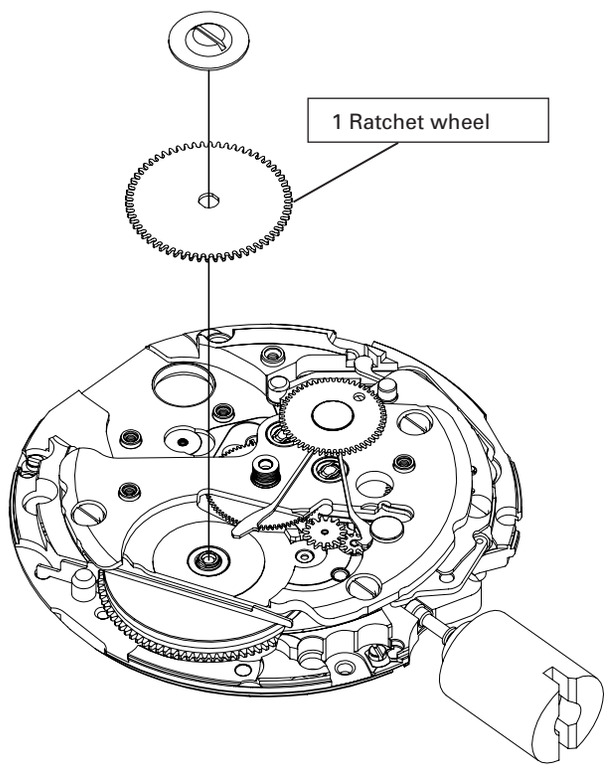
REASSEMBLE THE MOVEMENT

8



1. Set the barrel & train wheel bridge.
2. Tighten the barrel & train wheel bridge screws. (3 pcs.)

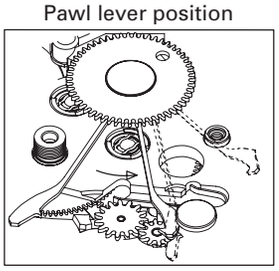
9



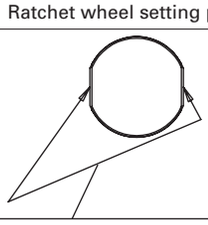
1. Slide the pawl lever aside, and then set the ratchet wheel.

   Notes

   Pawl lever position



   Ratchet wheel setting position



   Align the ratchet wheel with the chamfered surface of the barrel complete shown in the illustration.

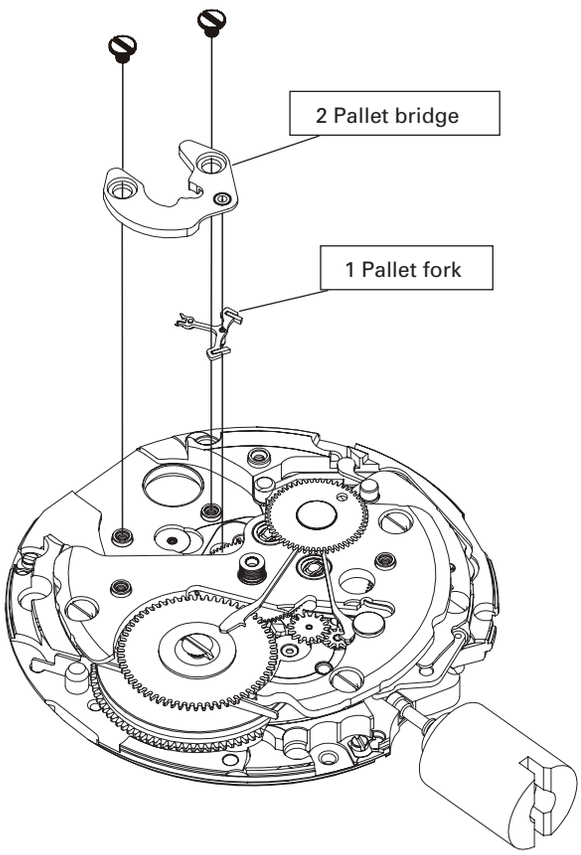
2. Tighten the ratchet wheel screw.

   * *Do not tighten the ratchet wheel screw too much.*

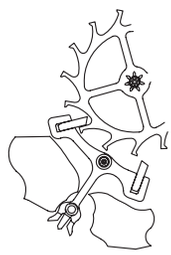
3. Try turning the crown clockwise a little at its original position in order to check that the wheels turn smoothly.

REASSEMBLE THE MOVEMENT

10

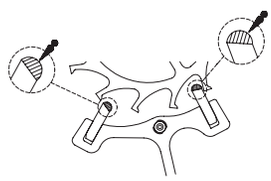


1. Set the pallet fork.
2. Set the pallet bridge.
3. Make sure that the pallet fork works smoothly.



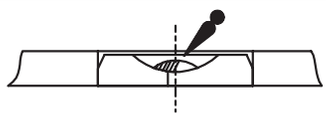
4. Lubricate the arms of the pallet fork as illustrated.

Type of oil: AO-3 (Moebius A)

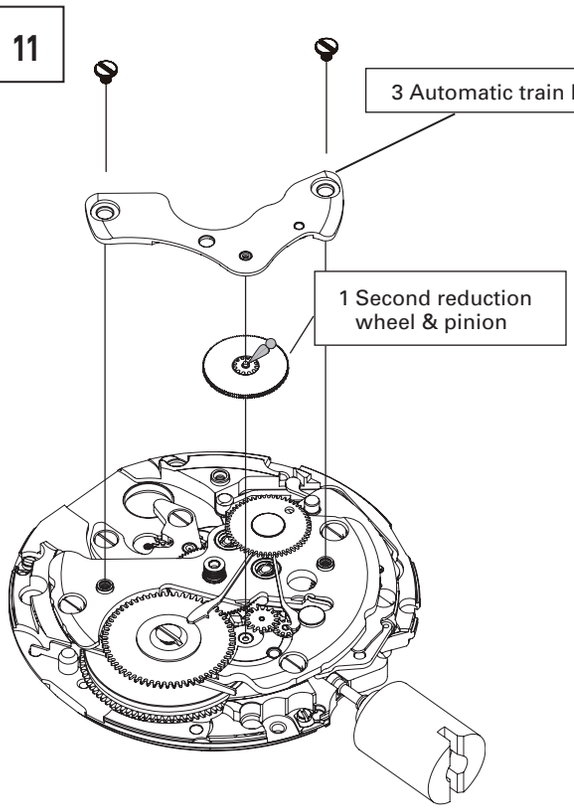


5. Lubricate the upper hole jewel for the pallet fork as illustrated.

Type of oil: AO-3 (Moebius A)

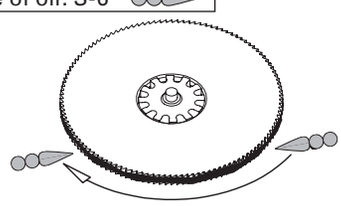


11



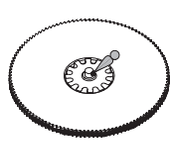
1. Lubricate the teeth surface of the second reduction wheel as illustrated.

Type of oil: S-6



2. Lubricate the upper pivot of the second reduction wheel as illustrated.

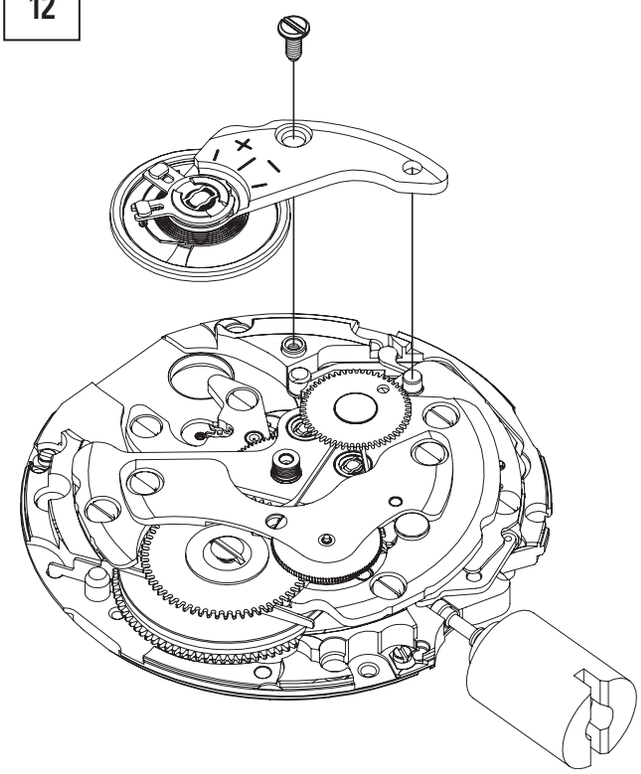
Type of oil: S-6



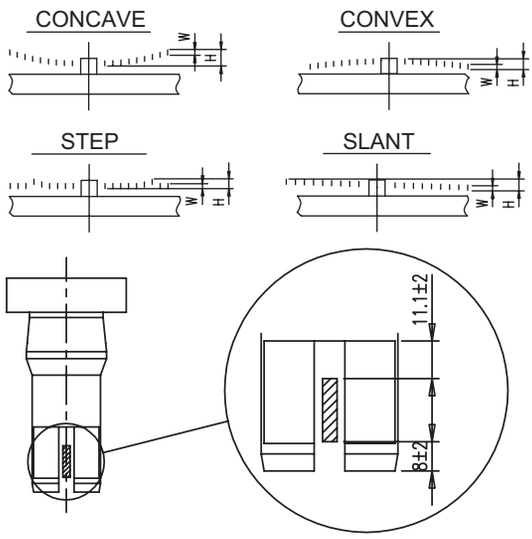
3. Set the automatic train bridge.
4. Tighten the automatic train bridge screws. (2 pcs.)

REASSEMBLE THE MOVEMENT

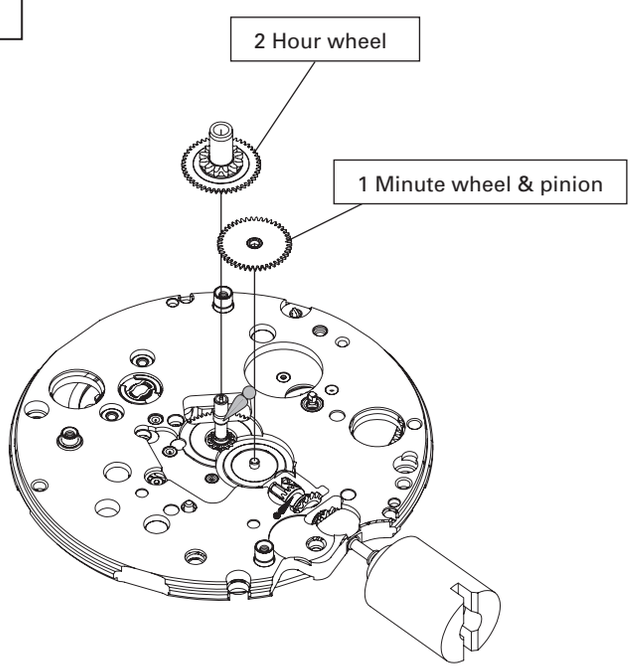
12



1. Set the balance complete with stud and balance bridge.
2. Make sure the hairspring is properly adjusted.

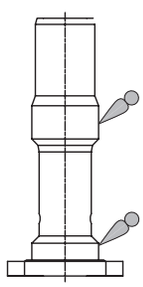


13



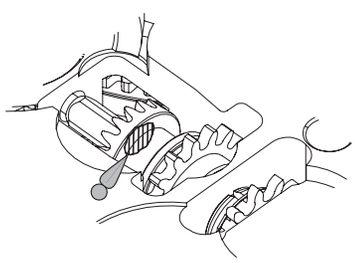
1. Set the minute wheel & pinion.
2. Lubricate the lateral surface of the hour wheel as illustrated, and then set the hour wheel.

Type of oil: S-6



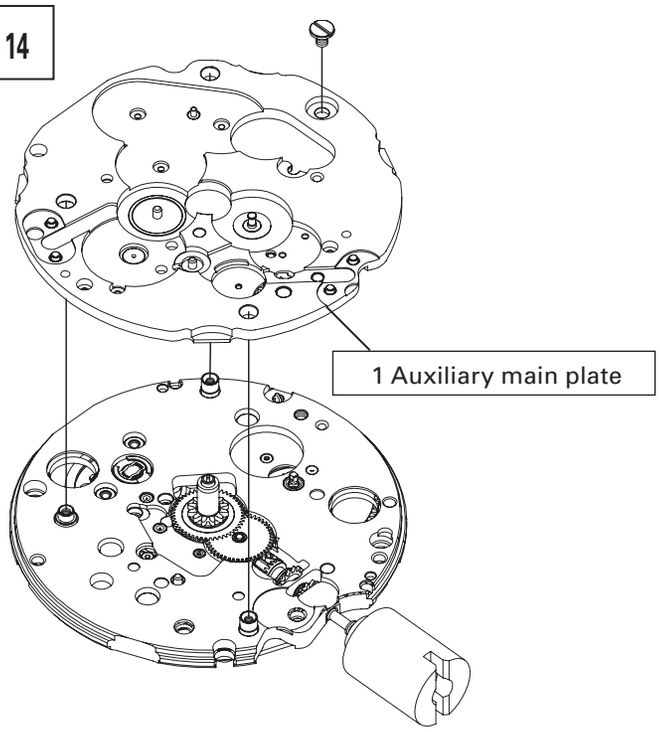
3. Lubricate the clutch wheel as illustrated.

Type of oil: S-6



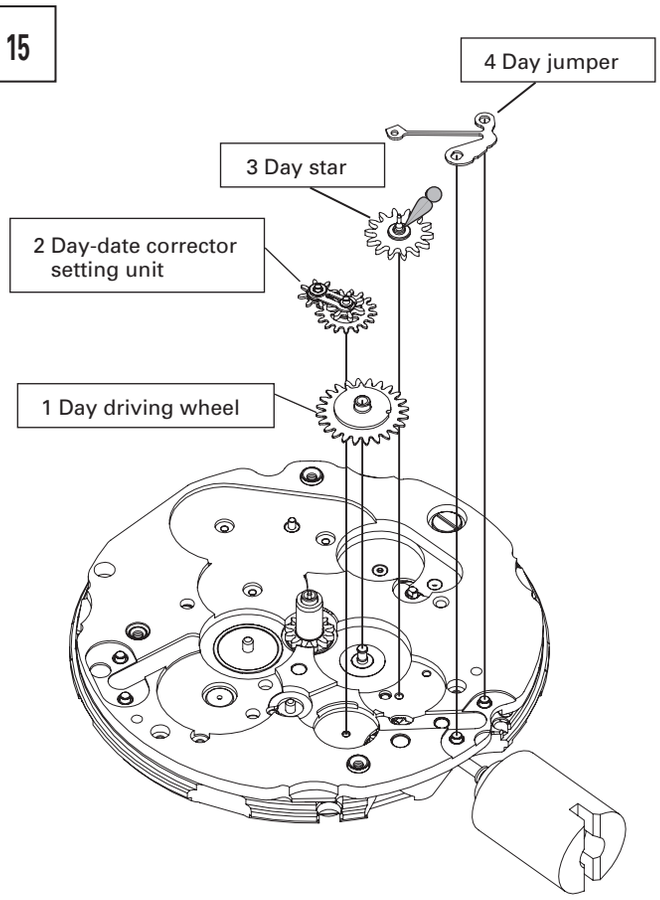
REASSEMBLE THE MOVEMENT

14



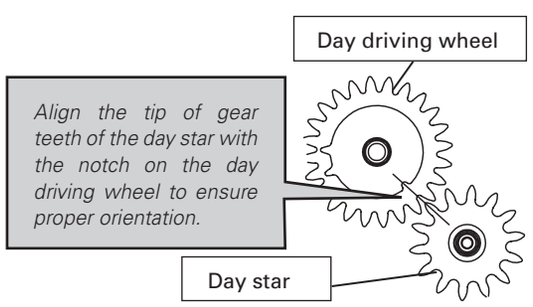
1. Set the auxiliary main plate.
2. Tighten the auxiliary main plate screw.

15



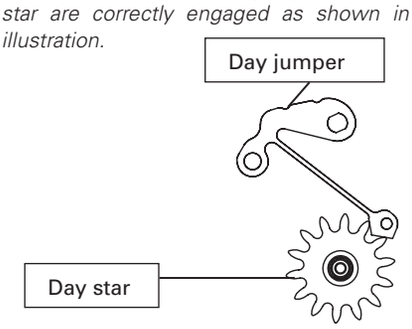
1. Set the day driving wheel.
2. Set the day-date corrector setting unit.
3. Set the day star.

* *Make sure that the day driving wheel and day star are correctly engaged as shown in the illustration.*



4. Set the day jumper.

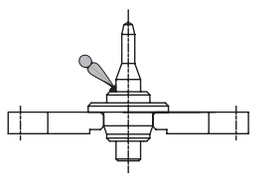
* *Make sure that the day jumper and the day star are correctly engaged as shown in the illustration.*



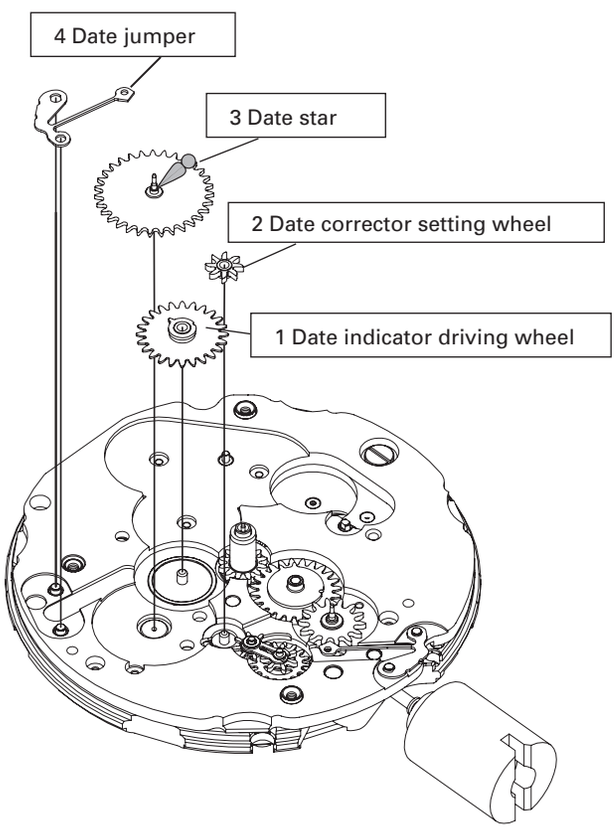
REASSEMBLE THE MOVEMENT

5. Lubricate the shaft of the date star as illustrated.

Type of oil: S-6

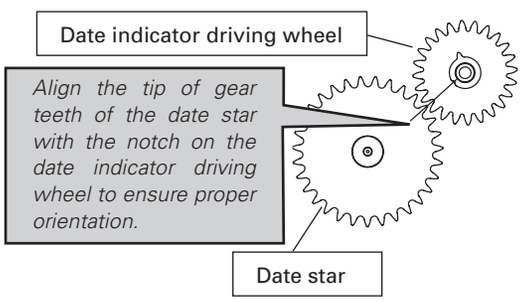


16



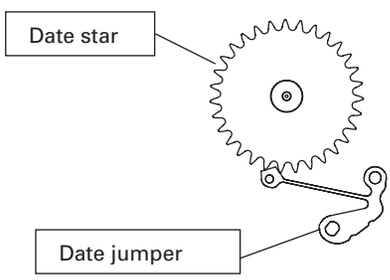
1. Set the date indicator driving wheel.
2. Set the date corrector setting wheel.
3. Set the date star.

* *Make sure that the date indicator driving wheel and date star are correctly engaged as shown in the illustration.*



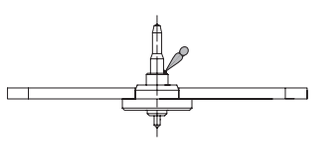
4. Set the date jumper.

* *Make sure that the date jumper and date star are correctly engaged as shown in the illustration.*



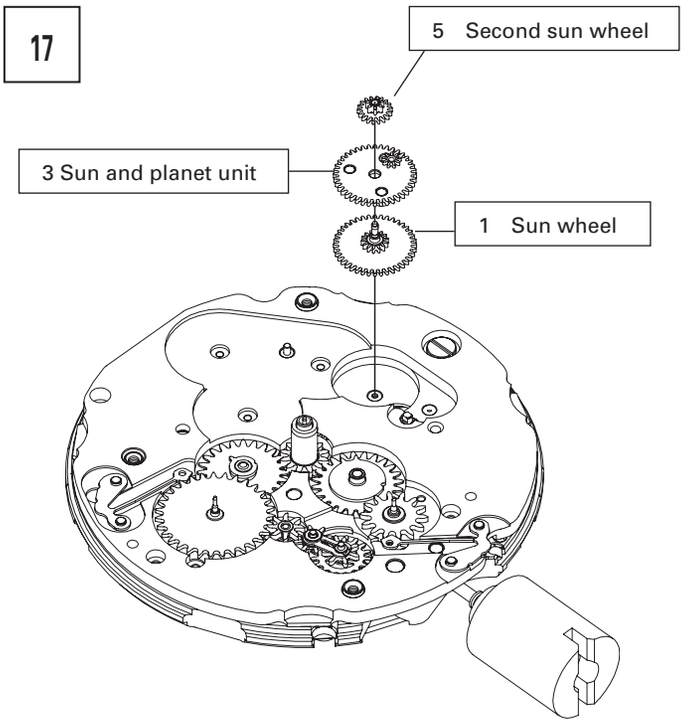
5. Lubricate the shaft of the date star as illustrated.

Type of oil: S-6



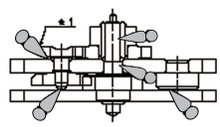
REASSEMBLE THE MOVEMENT

17



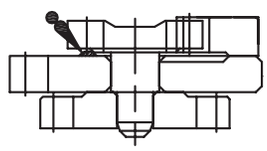
1. Set the sun wheel.
2. Lubricate the sun wheel as illustrated. (4 points)

Type of oil: S-6



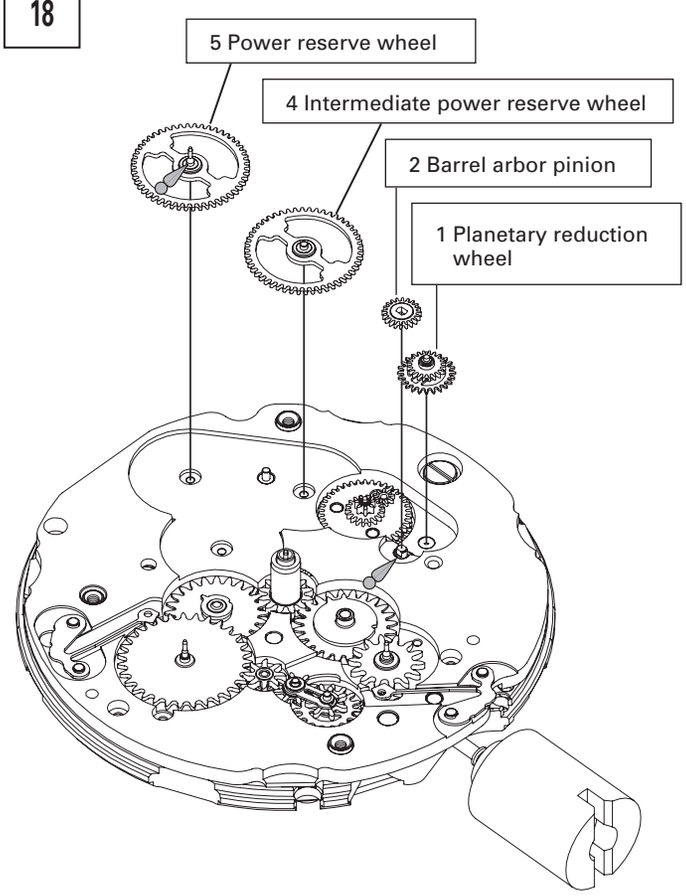
3. Set the sun and planet unit.
4. Lubricate the sun and planet unit as illustrated.

Type of oil: AO-3 (Moebius A)



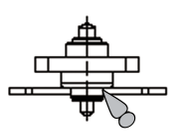
5. Set the second sun wheel.

18



1. Set and lubricate the planetary reduction wheel as illustrated.

Type of oil: S-6

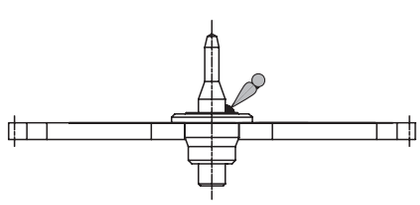


2. Set the barrel arbor pinion.
3. Lubricate the pinion of the barrel arbor pinion.

Type of oil: S-6

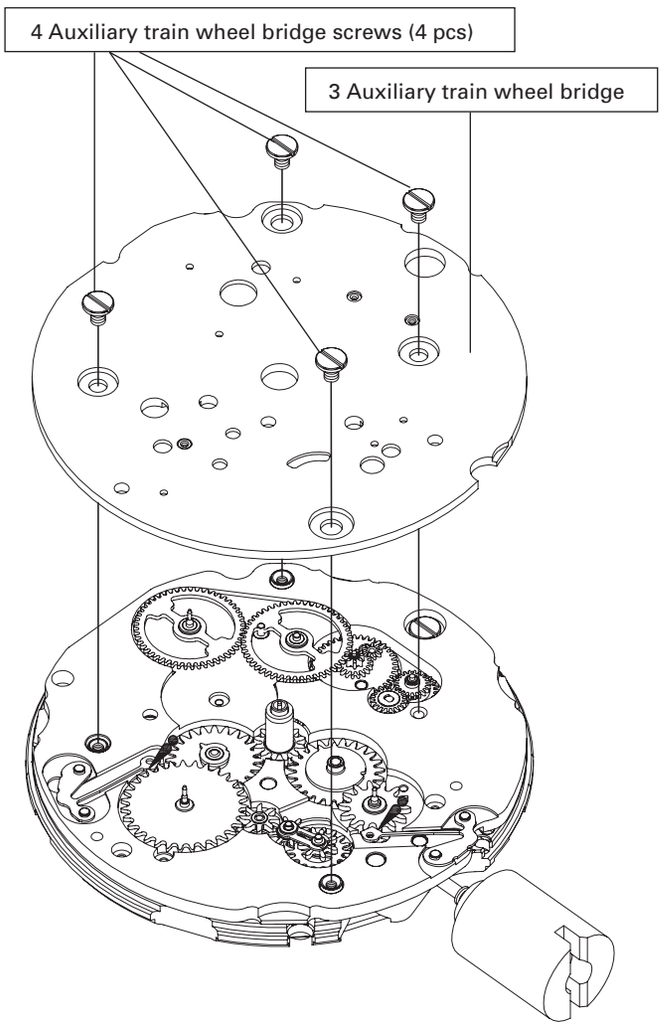
4. Set the intermediate power reserve wheel.
5. Set the power reserve wheel.
6. Lubricate the shaft of the power reserve wheel as illustrated.

Type of oil: S-6

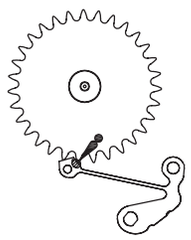


REASSEMBLE THE MOVEMENT

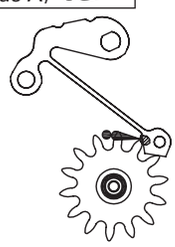
19



1. Lubricate the date jumper as illustrated.
   Type of oil: AO-3 (Moebius A)



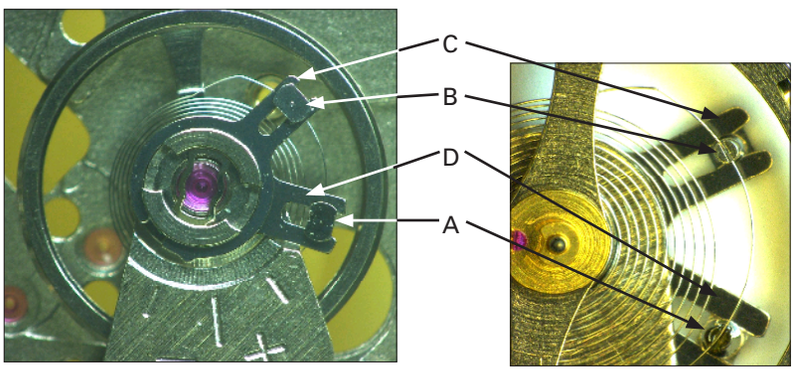
2. Lubricate the day jumper as illustrated.
   Type of oil: AO-3 (Moebius A)



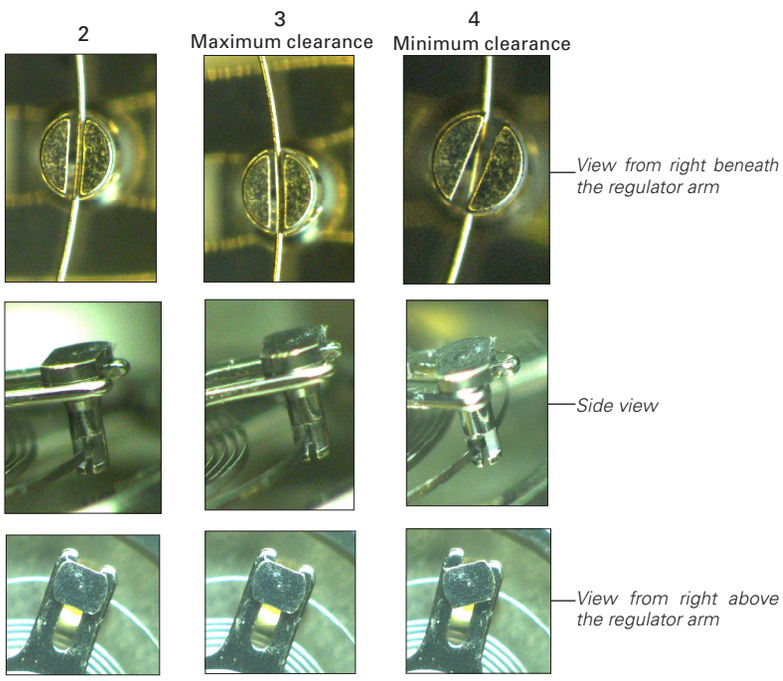
3. Set the auxiliary train wheel bridge.
4. Tighten the auxiliary train wheel bridges screws. (4 pcs)

20 HOW TO ADJUST THE HAIRSPRING

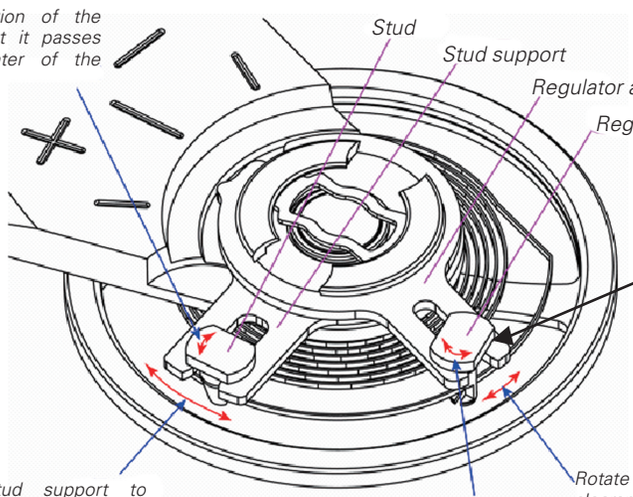
1. Names of the parts
   - A: Stud
   - B: Regulator pin
   - C: Regulator arm
   - D: Stud support



2. Rotate B to fine-tune the position of the outer end of the hairspring which passes through the regulator slot so that the hairspring makes the longest diameter.
3. Rotate A to fine-tune the position of the outer end of the hairspring so that the hairspring passes through the center of the regulator slot.
4. Rotate B to fine-tune the effective length of the hairspring which passes through the regulator slot to define adequate clearance.



Adjust the position of the hairspring so that it passes through the center of the regulator slot.



To adjust the length of the hairspring, rotate the regulator pin only counterclockwise (as indicated with the arrow). While doing so, make sure that the hairspring does not lean to one side.

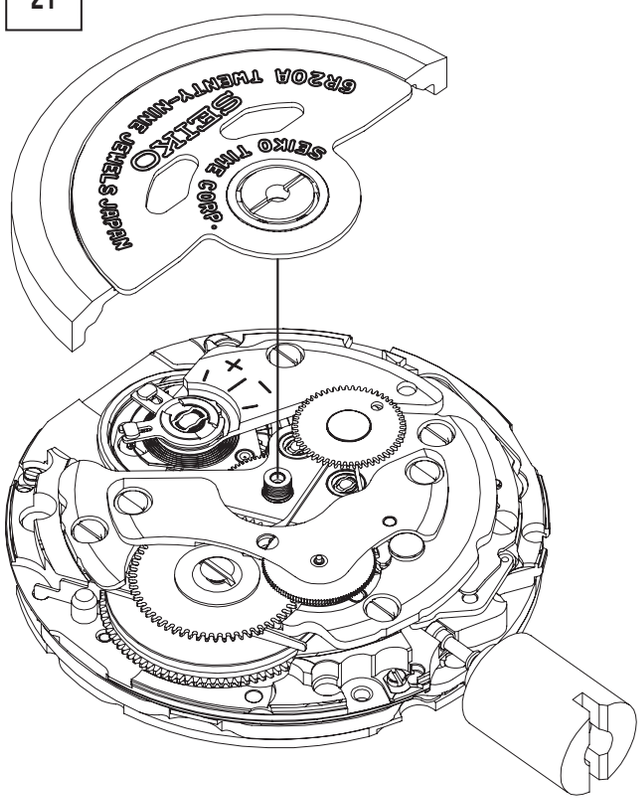
Move the stud support to correctly position the roller jewel.

Adjust the location of the regulator arm to fine-tune the length of the hairspring.

Rotate the regulator pin to adjust the clearance to control the swing angle of the hairspring.

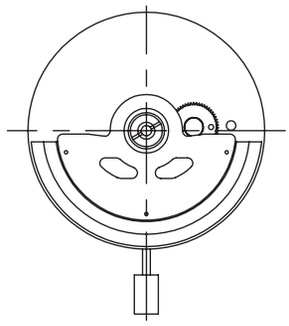
REASSEMBLE THE MOVEMENT

21



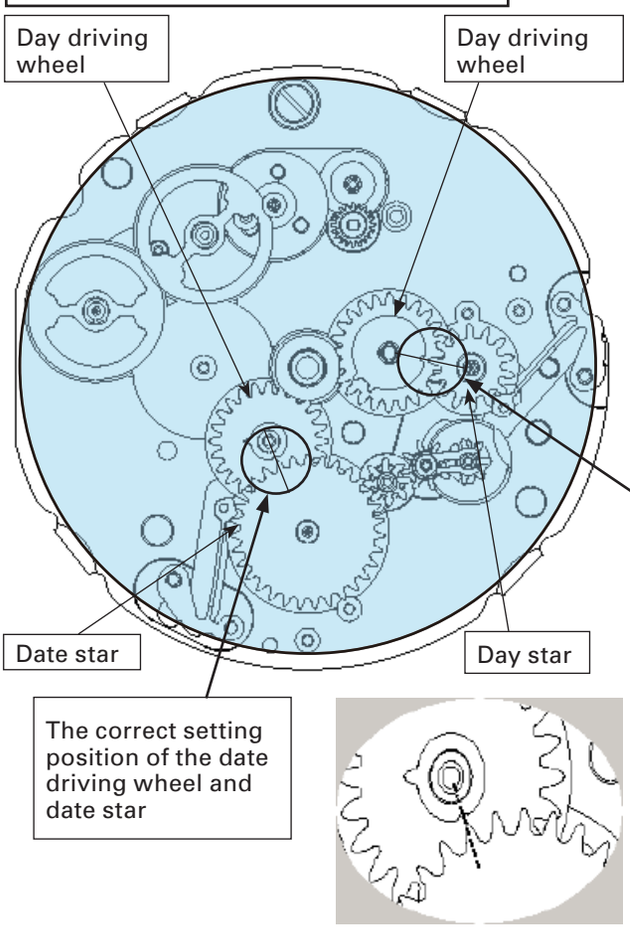
1. Set the oscillating weight and tighten the screw.

   * *Make sure that the oscillating weight is correctly positioned.*



MOUNTING OF CASING

1 Confirming the setting positions of date wheel and day wheel



1. Pull out the crown to the second click. While turning the crown clockwise to turn the hands, look through the circular holes of auxiliary train wheel bridge (refer to the illustration at left) to check that the notch on the date driving wheel and the tip of gear teeth of the date star are aligned and that the notch on the day driving wheel and the tip of gear teeth of the day star are aligned, as shown in the left illustration.
   * If they are correctly aligned, the day hand moves after the date hand is correctly aligned. If not, the day hand and the date hand do not move in the proper order.
   * If they are not correctly aligned, remove the auxiliary train wheel bridge and reset so that the date star and date driving wheel are correctly engaged and that the day star and day driving wheel are correctly engaged.

2 Setting the dial

1. Set the dial to the movement and turn the movement over.
2. Turn the case locking pin to hold the legs of the case (at two points).

MOUNTING OF CASING

3

1. Set the power reserve indicator
   *Wind the mainspring of the barrel complete fully, and then set the power reserve indicator with pointing its tip to the "full" position of the power reserve indication on the dial.

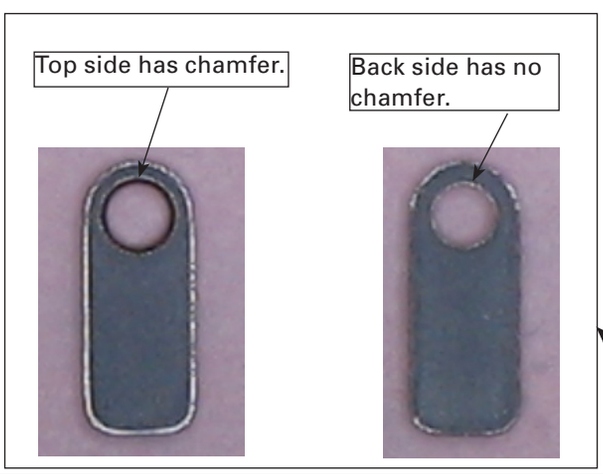
4

1. Set the date hand
   * Fit its tip to the middle of the date scale.

5

1. Set the day hand.
   * Point its tip to the middle of of "SUN."

6. Setting the hands – Attaching in from the side



1. Turn the date hand clockwise to change the date.
   *Just before the date changes, slow down the speed of turning the hand, and when the date changes, stop turning it.
2. Mount the hour hand at the 12 o'clock position.
3. Mount the minute hand at the 12 o'clock position.
4. Turn the hour and minute hands to check the time when the date is changed.
5. Mount the second hand at the 12 o'clock position.
6. Check that the hands are properly mounted.
7. Take off the winding stem.
8. Set the dial with movement to the body.
   *Before setting, remove dust and fluff on the dial and inside the body.
9. Set the case ring.
10. Set the winding stem to the crown.
11. Set the casing clamp spring and screw it with the casing clamp screws (at the two points).
    *Be careful of the setting direction of the casing clamp spring as it has the top and back sides.