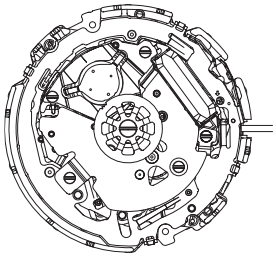
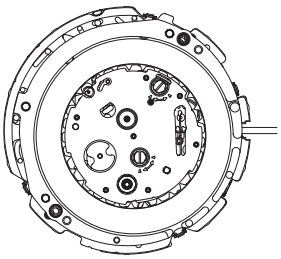
PARTS CATALOGUE/TECHNICAL GUIDE
Cal. 7L22A

[SPECIFICATIONS]

Item \ Cal. No.		7L22A
Movement		  (x 1.0)
Movement size	Outside diameter	ø32.0 mm
	Casing diameter	ø30.0 mm
	Height	6.4 mm
Time indication (Movement intervals)		Main time : Hour, minute and small second hands (1second)
		Stopwatch : Stopwatch minute and 1/5 second hands (0.2 second)
Driving system		Step motor, 2 pieces (Load compensated driving pulse type)
Additional mechanism		• Electronic circuit reset switch • Train wheel setting device • Date calendar • Instant setting device for day calendar • Automatic generating system • Energy depletion forewarning function • Overcharge prevention function • Stopwatch function 45 minutes measurement in 1/5 second increments Accumulated elapsed time measurement Heartcam fly-back Reset
Loss/gain		Monthly rate within normal temperature range: less than 15 seconds
Regulation system		Nil
Measuring gate by quartz tester		10-second gate
Power Supply	Power generator	Automatic generating system
	KINETIC E.S.U	Titaniume lithium ion rechargeable battery
Operating voltage range		0.45 ~ 2.5 V
Duration of operation		From full charge to stoppage : Approximately 5 months
Jewels		8 jewels

BEFORE STARTING REPAIR WORK ON 7L22A

Before starting repairs, read this manual carefully to understand the features of this watch and strictly observe the instructions regarding how to perform repairs and checks in order to ensure appropriate work is carried out.

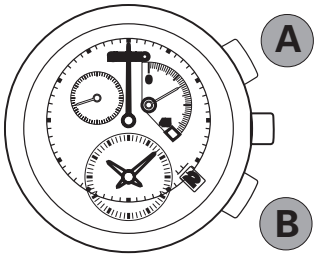
Features of Cal. 7L22A

The Cal. 7L22A is a fully-fledged chronograph featuring a Kinetic Automatic Generating System.
5M6 series parts are used for the Automatic Generating System and 7N series parts are used for the wheels and motors.

1. Stopwatch functions

- The stopwatch is designed to time up to 45 minutes in 1/5 second increments.
- The measured time is indicated by two stopwatch hands.
- After timing for 45 minutes, it continues timing up until 48 minutes before automatically stopping.
- The stopwatch can be reset even while it is currently timing.

- **Stopwatch Operation:**
  Button A : Start/ Stop
  Button B : Reset



- **Heartcam Chronograph Reset:**
  The two stopwatch hands are instantaneously reset to the zero position.

- **Measuring methods:**
  Standard measurement
  Accumulated elapsed time measurement

2. Kinetic features

- The watch will keep operating for approximately 5 months when fully charged under the condition that the stopwatch is used for no longer than for 45 minutes per day.
- **Energy Depletion Forewarning Function**
  When energy is running low, the small second hand will start moving in two-second intervals to indicate recharging is required. If the watch is not recharged at this time, it will run down within approximately 12 hours after the initial forewarning.
- Gently swing the stopped watch from side to side at least five hundred times until it returns to its normal one-second intervals from the two-second intervals.

PARTS CATALOGUE

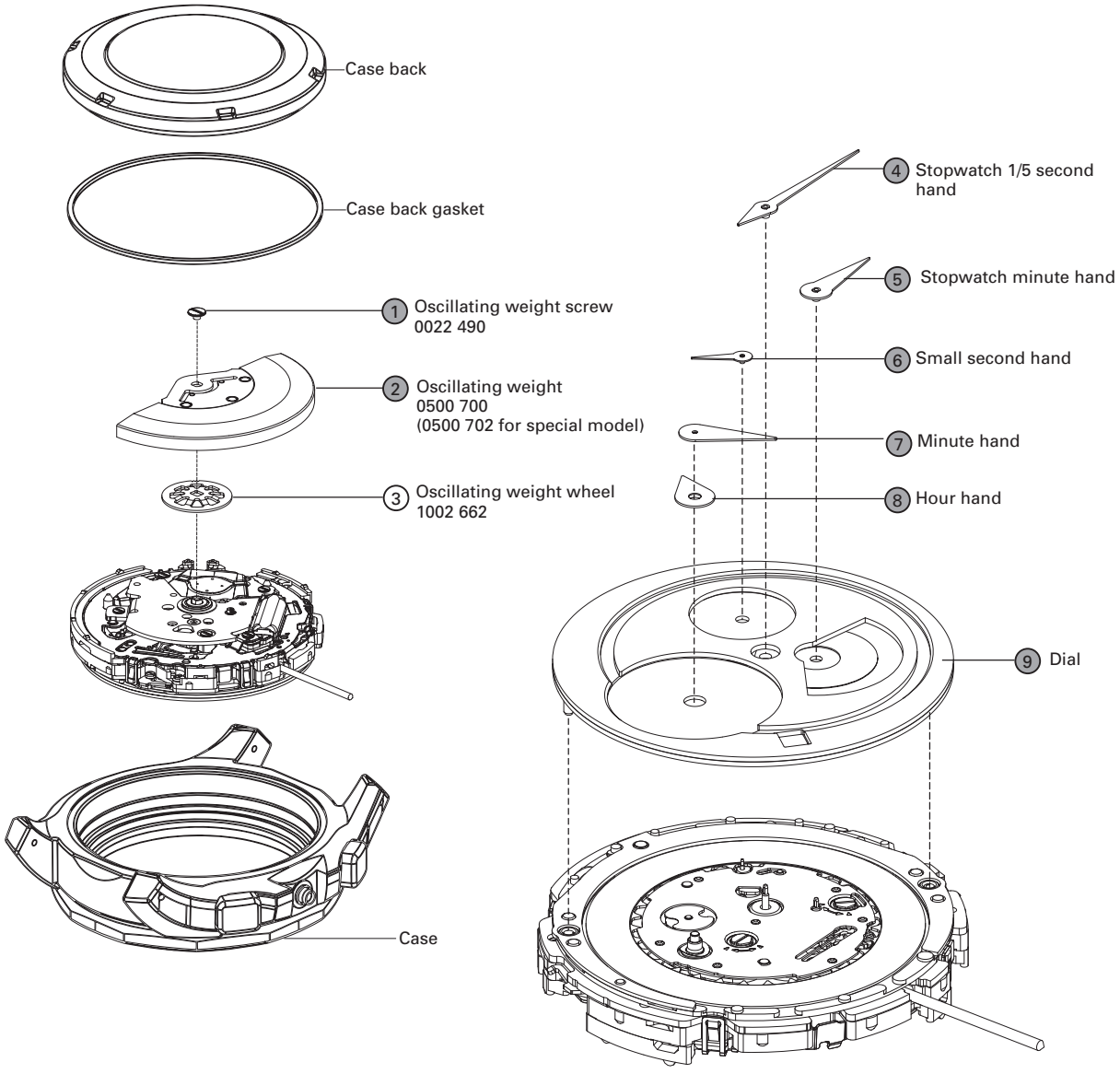
Disassembling procedures Figs. : (1) → (85)
Reassembling procedures Figs. : (85) → (1)
Lubricating : Types of oil **Oil quantity**

Moebius A — Normal quantity
Moebius F — Large quantity
SEIKO Watch Oil S-6

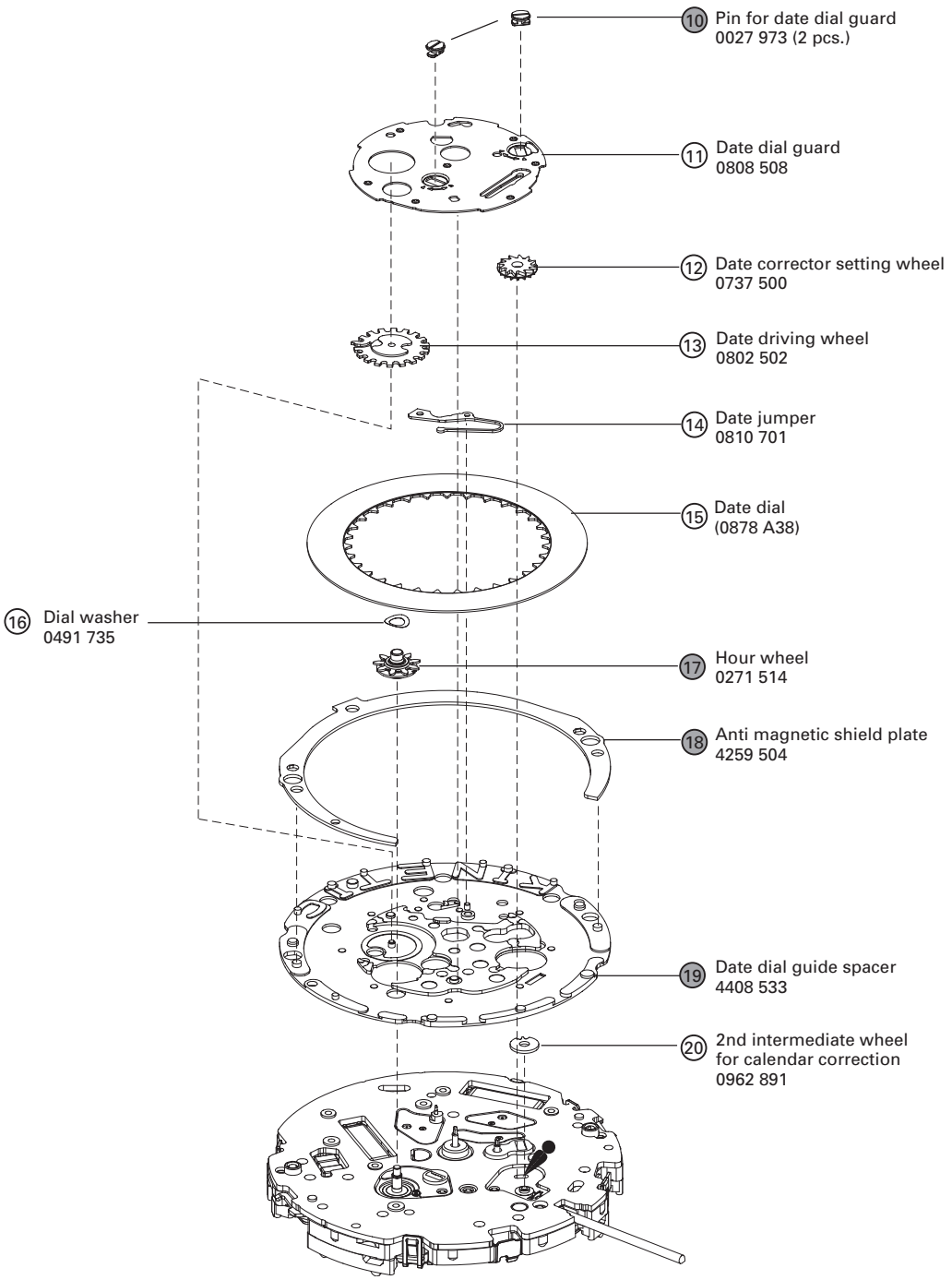
Remarks

When removing the movement from the case or releasing the setting stem during repairs, make sure that the crown is pushed in to the zero position (its original position) and then gently push down on the setting lever to remove the movement from the setting stem.

To comply with the new structure of the Cal.7L22, an exclusive movement holder should always be used for dissembly and reassembly.



Please see the remarks on the following pages.
Lubricating of some parts is shown in "II. REMARKS ON DISASSEMBLING AND REASSEMBLING".



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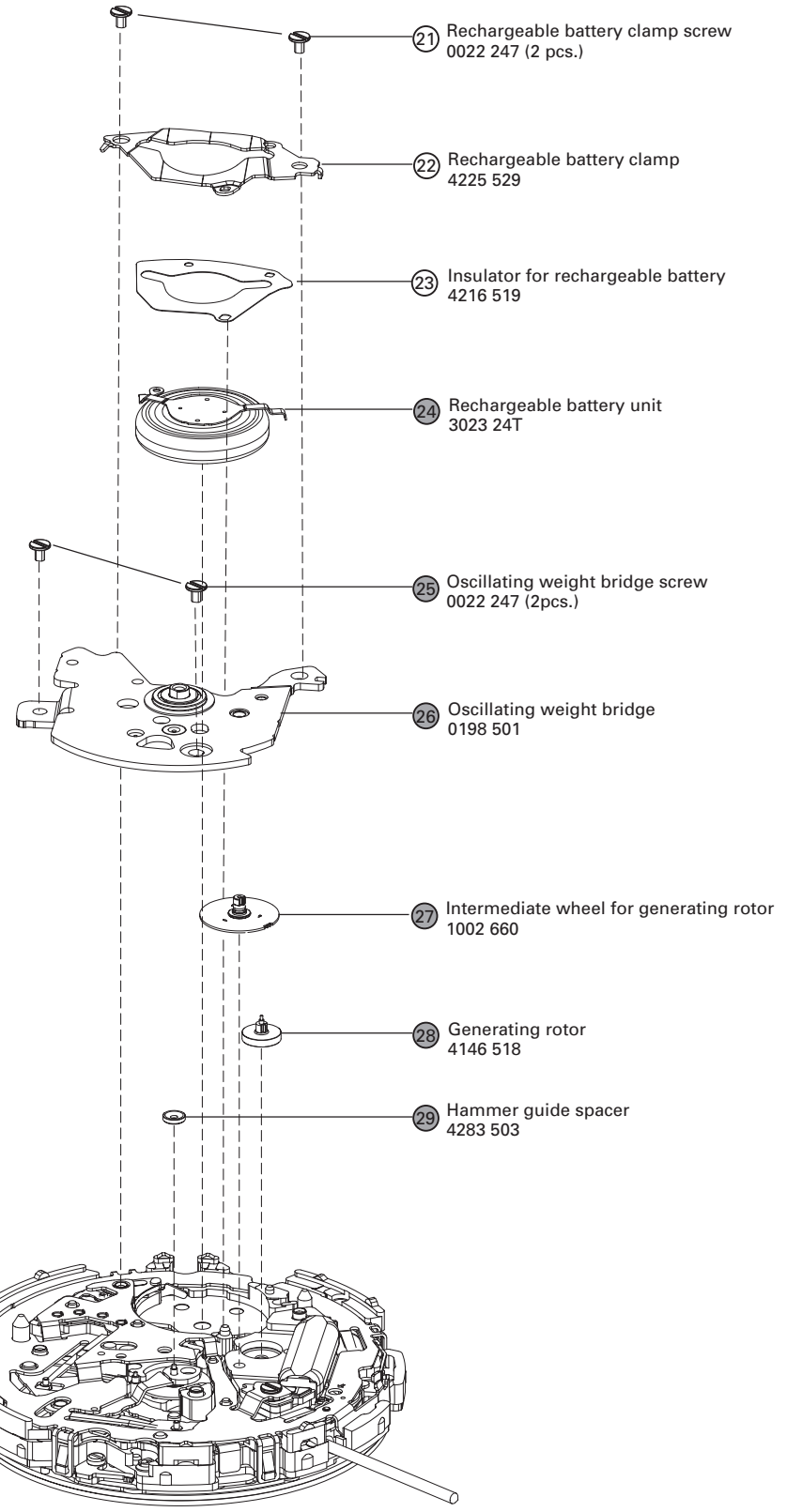

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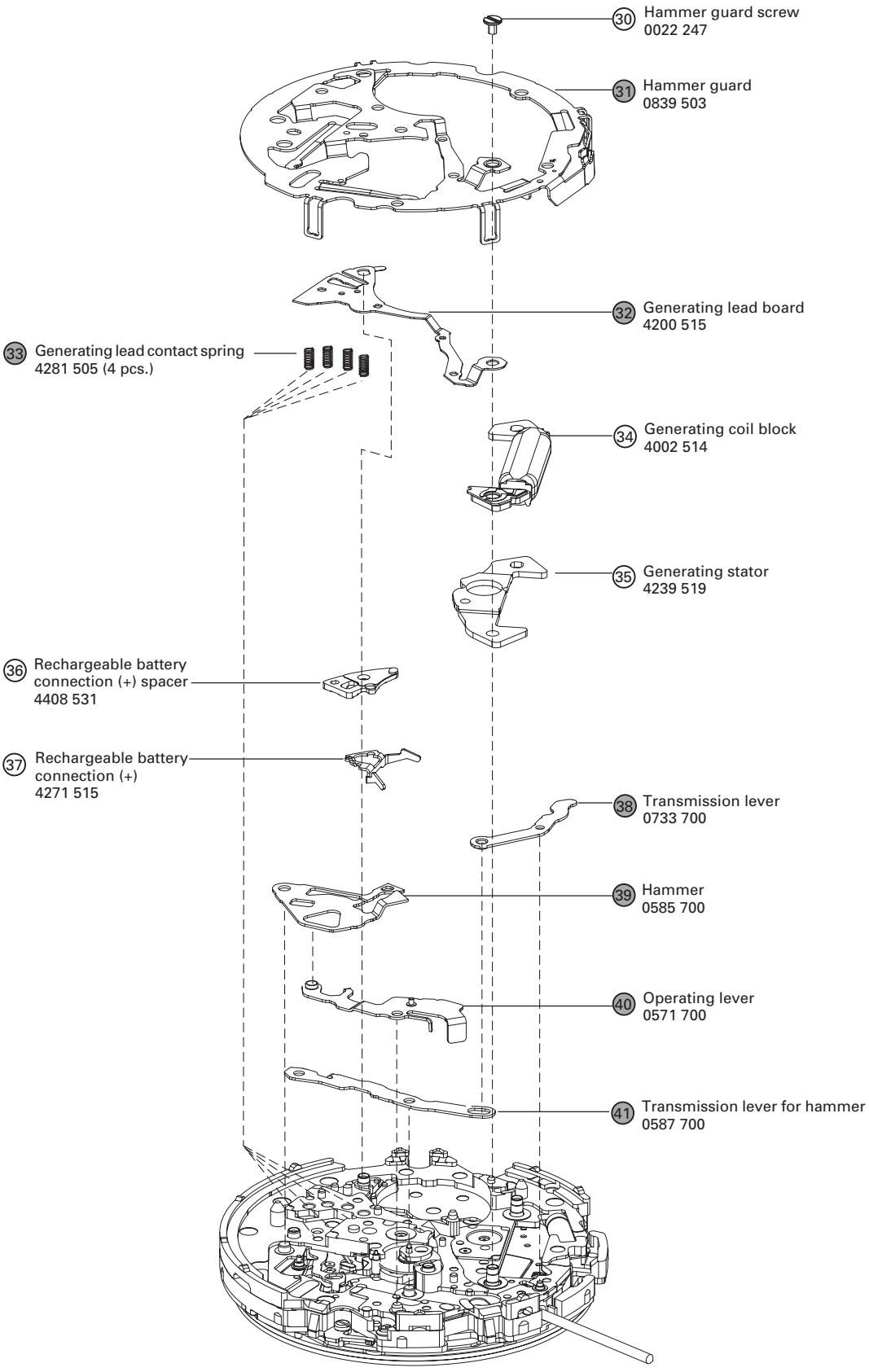

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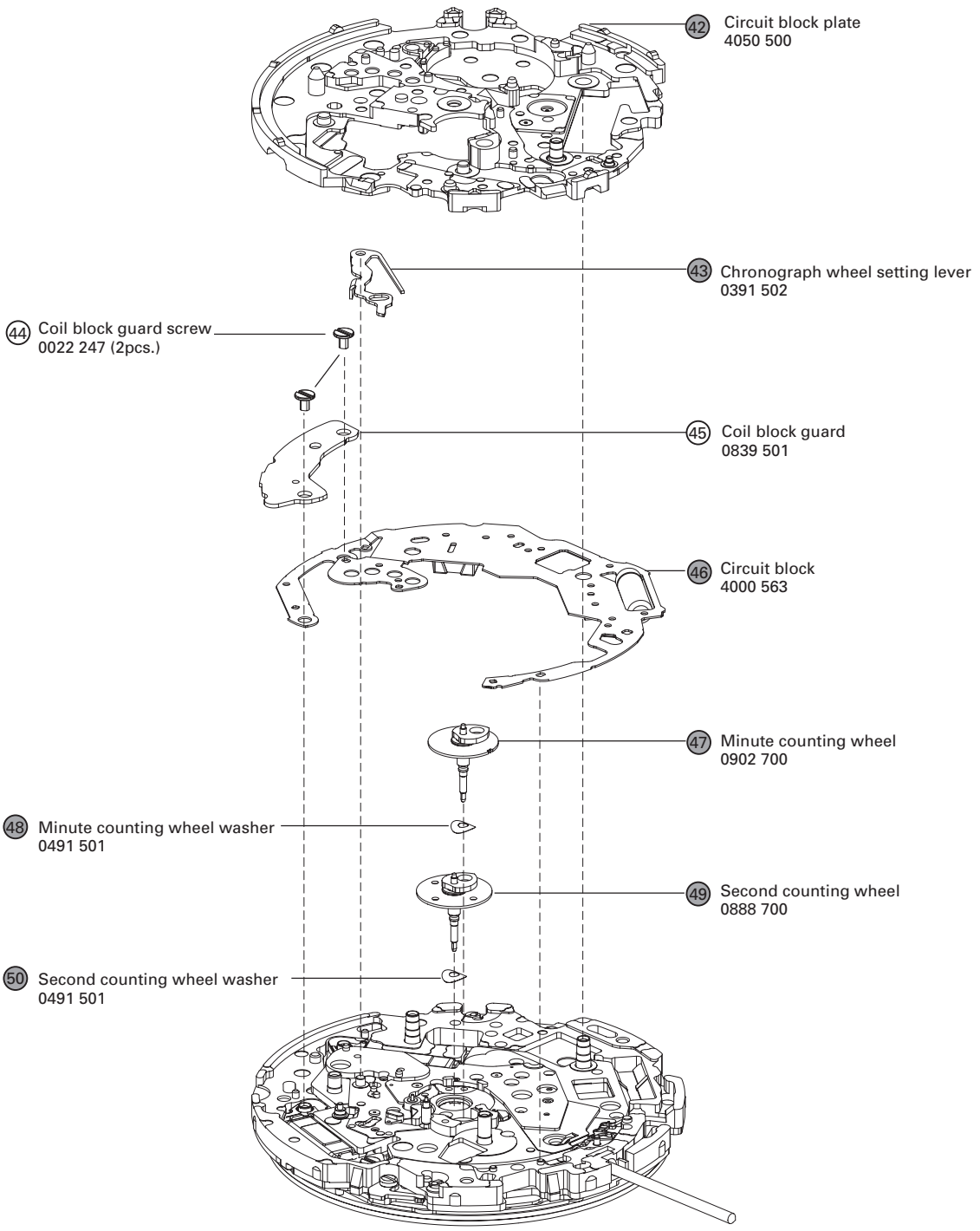

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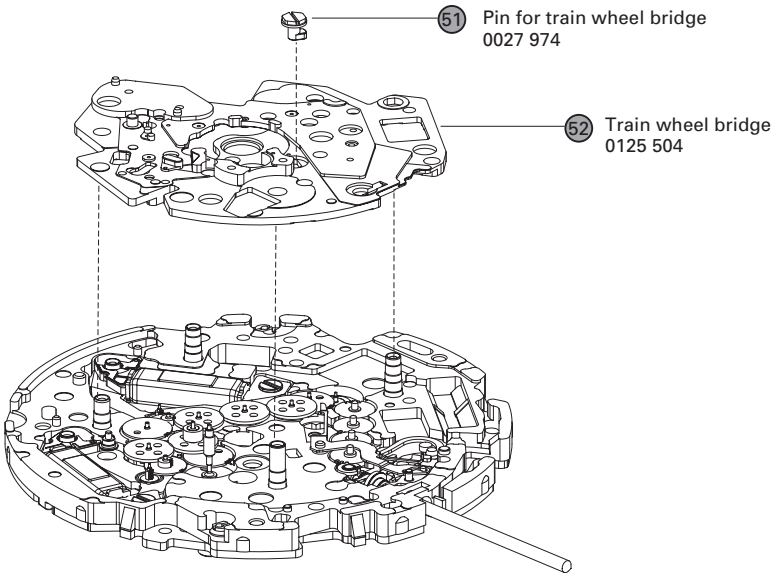
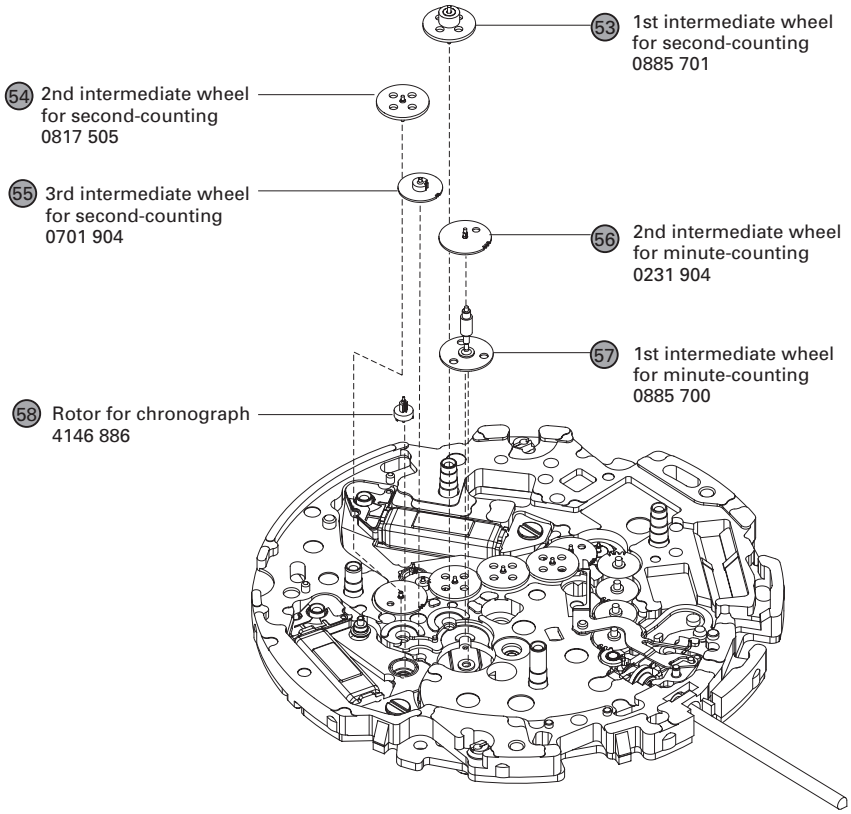
PARTS CATALOGUE





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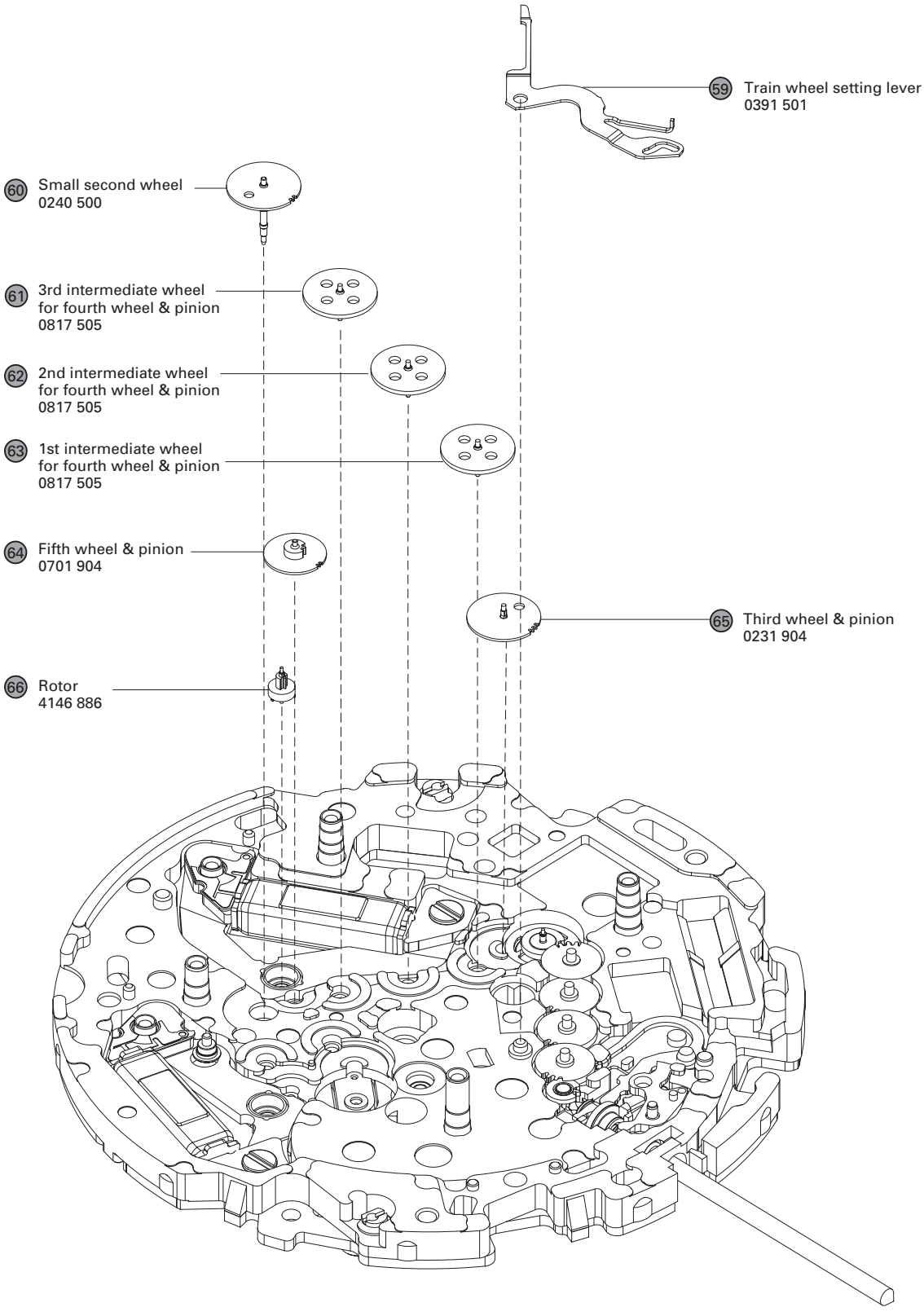

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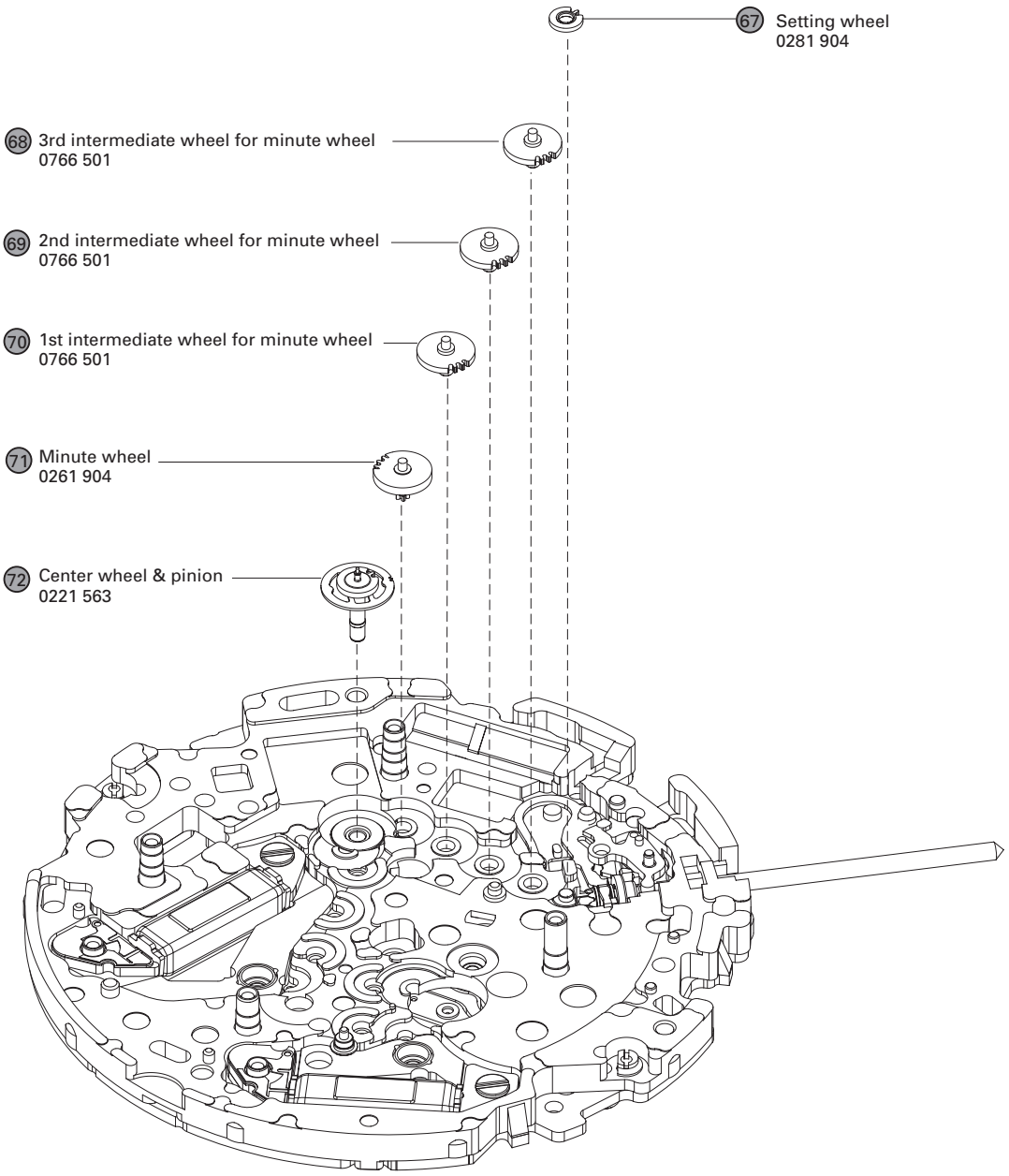

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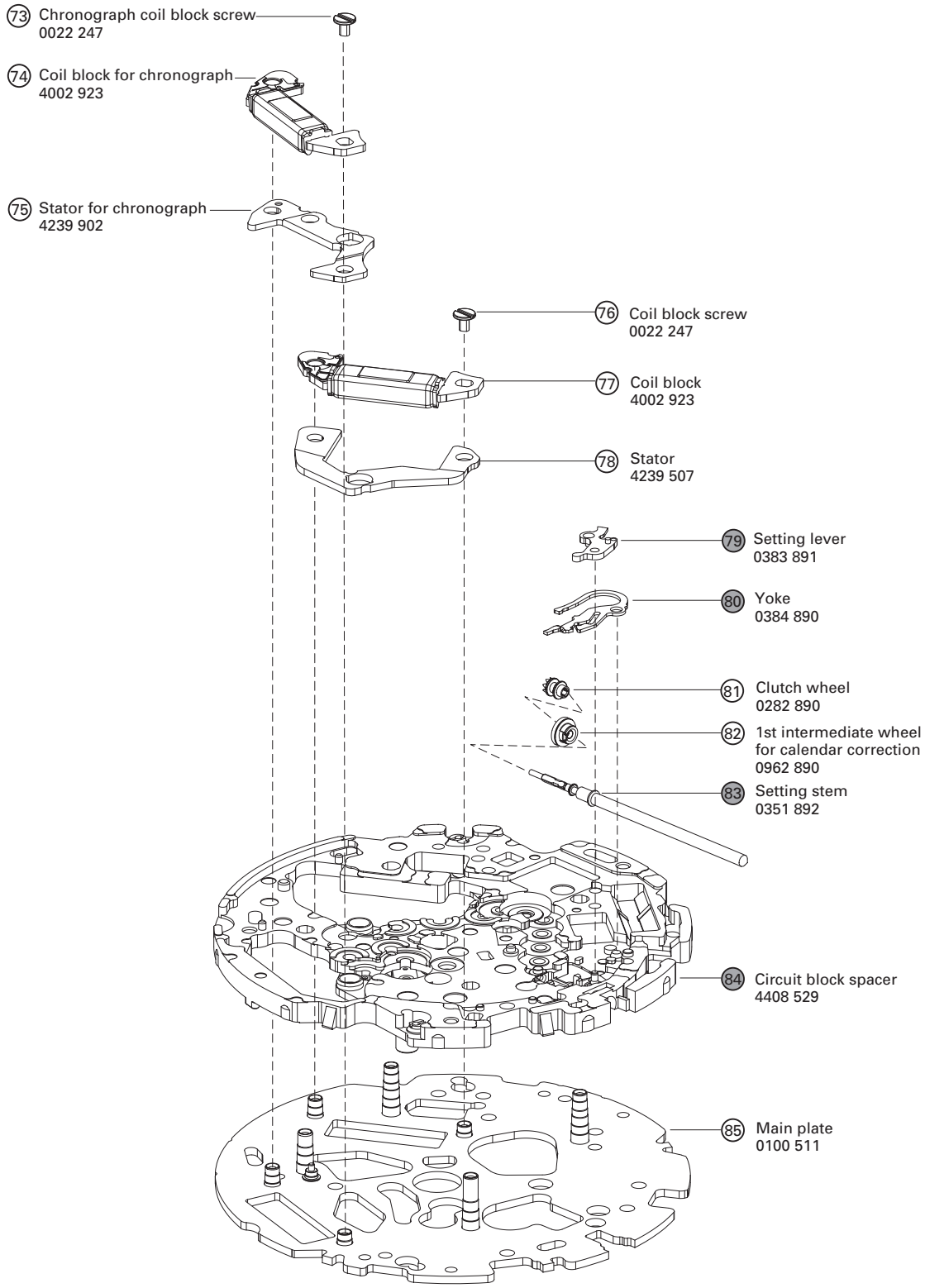


● ⇨ Please see the remarks on the following pages.
Lubricating of some parts is shown in “II. REMARKS ON DISASSEMBLING AND REASSEMBLING”.

Remarks

② Oscillating weight 0500 700

Unless otherwise specified, use the oscillating weight (0500 700) for ordinary models.
For some particular models, the oscillating weight for special model (0500 702) are provided. (Refer to the illustration below.)

* Never use the oscillating weight for special model (0500 702) for models other than the specified ones.

⑮ Date dial

Parts code	Crown position	Calendar frame position	Color of figure	Color of background
0878 A37	3 o'clock	around 4 o'clock	white	black
0878 A38	3 o'clock	around 4 o'clock	black	white

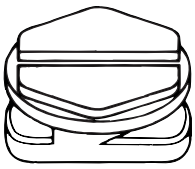
⑧③ Setting stem 0351 892

The type of date dial and setting stem are determined based on the case design.
Check the case number and refer to "SEIKO Casing Parts Catalogue" to choose the appropriate ones.

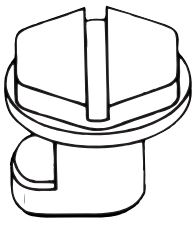
⑩ Pin for date dial guard 0027 973
⑤① Pin for train wheel bridge 0027 974

For distinction between those pins, see the illustration below.

Pin for date dial guard
0027 973

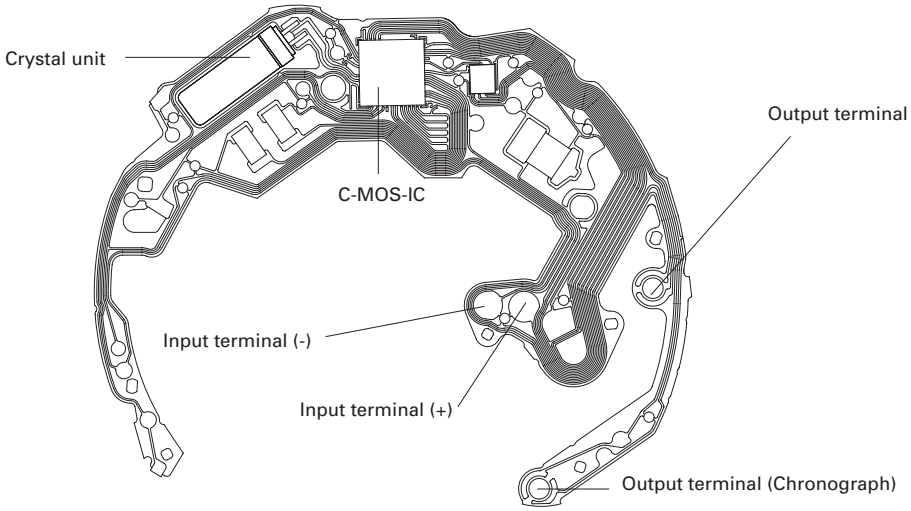


Pin for train wheel bridge
0027 974



- The explanation here is only for the particular points of the Cal. 7L22A.
- For preparing, checking and measuring procedures, refer to the "TECHNICAL GUIDE, GENERAL INSTRUCTIONS".

I. STRUCTURE OF THE CIRCUIT BLOCK



II. REMARKS ON DISASSEMBLING AND REASSEMBLING

For the lubricating instructions on the following pages, refer to the icons below to identify the type and quantity of the oil required.

Lubricating : Types of oil	Oil quantity
Moebius A	Normal quantity
Moebius F	Large quantity
SEIKO Watch Oil S-6	

❖ **Exclusive movement holder for 7L22A**

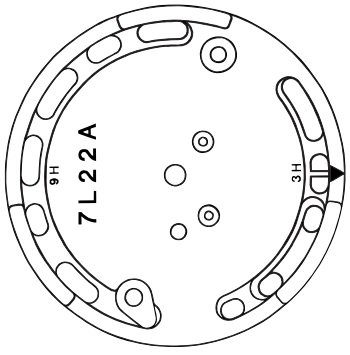
The Cal.7L22A has such a special structure that it will make it difficult for you to perform repairs with ordinary movement holders. Therefore, it is highly recommended you use the exclusive movement holder for the Cal. 7L22A for disassembling, reassembling and especially when installing the hands. The use of other movement holders could damage the movement of the Cal. 7L22A.

<How to use the exclusive movement holder>

◆ When using the exclusive movement holder during repairs on the calendar side or installation of the hands (for disassembling/reassembling procedures④ to⑳).

Use the top side of the exclusive movement holder. (Refer to the illustration to identify the top and bottom sides.)

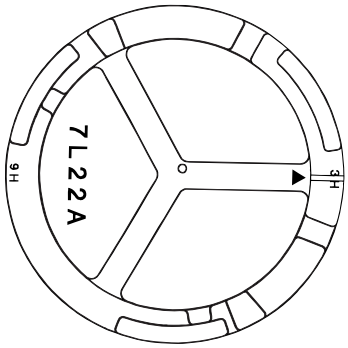
Remove① Oscillating weight screw,② Oscillating weight,③ Oscillating weight wheel from the movement, then set the movement in the movement holder with its calendar side facing up.



◆ When using the exclusive movement holder during repairs on the wheels (Automatic generator) side (for disassembling/reassembling procedures ㉑ to ㊽).

Use the bottom side of the exclusive movement holder. (Refer to the illustration to identify the top and bottom sides.)

Set the movement in the movement holder with its main plate side facing down.



① Oscillating weight screw

◆ Use a screwdriver of an appropriate size for the width of the oscillating weight screw for disassembling and/or reassembling.

◆ Tighten the oscillating weight screw firmly, applying more force than usual.

④ Stopwatch 1/5 second hand - ⑧ Hour hand

<Disassembling>

◆ When removing the hands, exercise care not to deform the hands or scratch the dial.
◆ Use a hand remover (HR-01) as needed.

<How to install the hands>

1. Pull out the crown to the second click and rotate it counterclockwise to turn the hour and minute hands clockwise, observing the movement of the date numeral in the calendar frame.
2. As the date numeral moves gradually, slow down the turning of the hands. When the date numeral jumps to the next day, stop turning the hands.
3. Install the small second hands, hour hand and minute hands exactly to the 12 o'clock position.
4. In order to reset the hands, press down the transmission lever (at the button B position).
5. Install the stopwatch minute hand exactly to the 0 minute position.
6. Install the stopwatch 1/5 second hand exactly to the 0 second position.

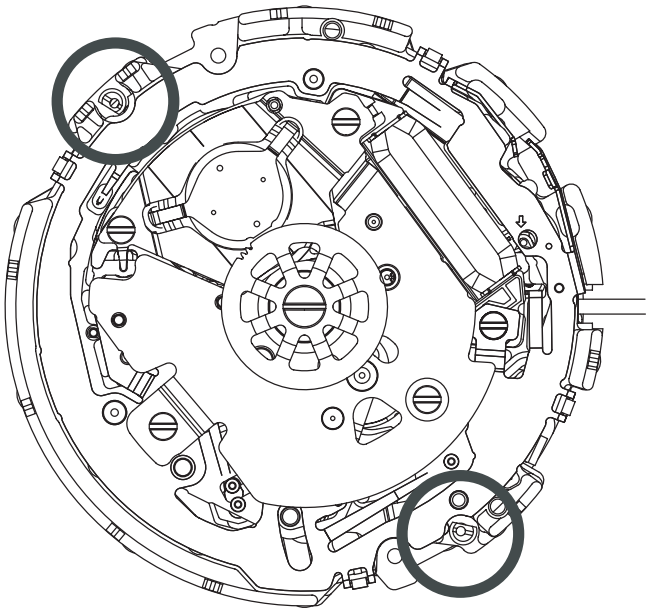
* Always install a new stopwatch minute hand and stopwatch 1/5 second hand. Used hands may drop off at an impulse of resetting.
* After completed the installation of the hands, make sure that there is no interference of the hands.

⑨ Dial

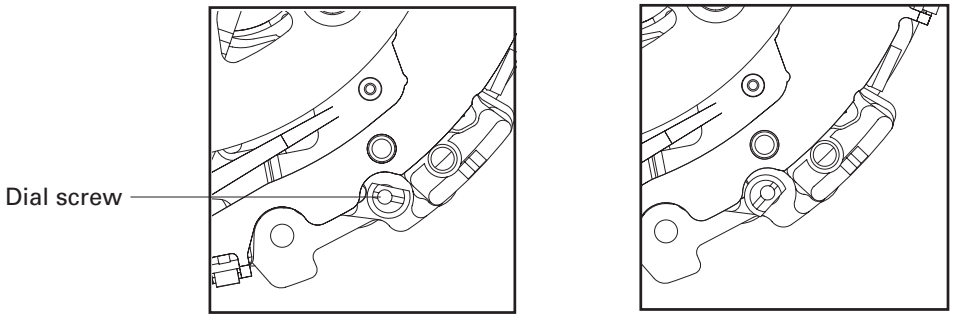
The dial is fastened by the dial screws engaged in the legs of the dial. Therefore, before removing the dial, disengage the dial screws using a screwdriver. (Refer to the illustration below.) Failing to do so could cause damages to the dial.

- The legs of the dial are firmly engaged to the circuit block spacer. Apply force to remove or install the dial.
- To remove the dial, gradually lift up the leg areas indicated in the illustration below.
- To install the dial, gently press down the leg areas indicated in the illustration below little by little alternately.
- Make sure that the dial is securely set with no gap between the dial and the date dial guide spacer.

<How to handle the dial screw>



* Never overturn the dial screws.
Be careful not to damage other parts.



Not engaged **Engaged**

⑩ Pin for date dial guard

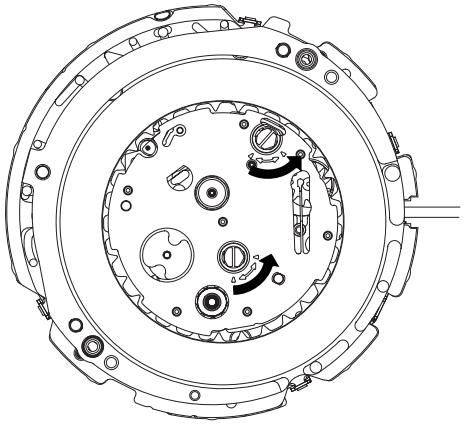
<Disassembling>

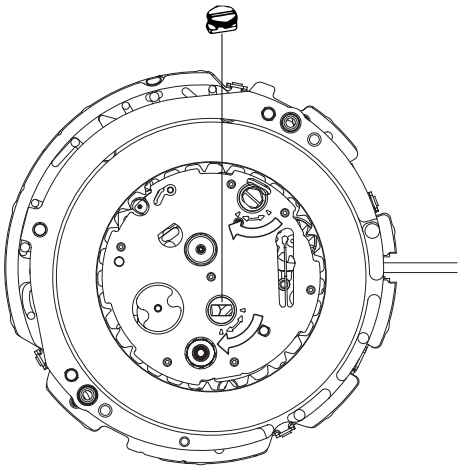
Turn the pins 90° counterclockwise to loosen them using a screwdriver.

<Reassembling>

Make sure that the pins are securely set in the hinge.

Using a screwdriver, turn the pins 90° clockwise to fix them.



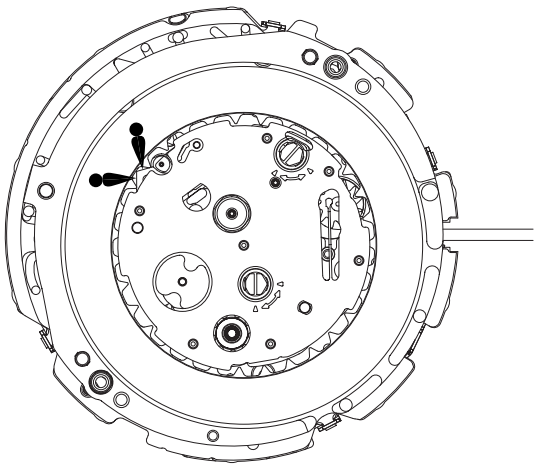


Notes:

- Never turn the pins more than 90° clockwise or counterclockwise.
- Never apply excessive force to the pins when turning them using a screwdriver.

<Lubricating>

Lubricate the joint of the teeth of the date jumper and date dial.



⑰ Hour wheel

Before installing the hour wheel, make sure that the hour wheel is firmly engaged in the pinion of the minute wheel.

⑱ Anti magnetic shield plate

The anti magnetic shield plate is engaged with the tubes of the date dial guard spacer.

Usually it is not necessary to remove the anti magnetic shield plate from the date dial guard spacer during disassembling.

*Refer to " ⑲ Date dial guide spacer " .

⑲ Date dial guide spacer

<Disassembling>

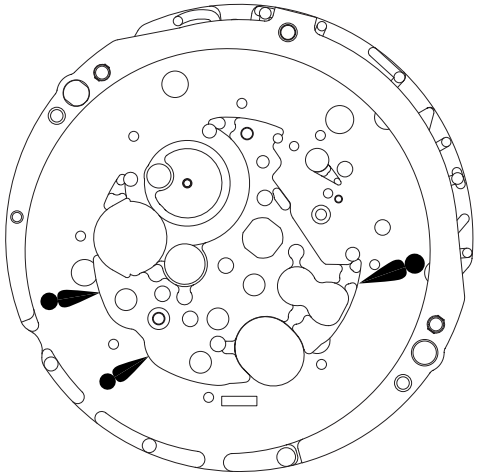
Take care not to deform the date dial guide spacer in an attempt to remove it, with attention to the two tubes engaged in the date dial guide spacer.

<Reassembling>

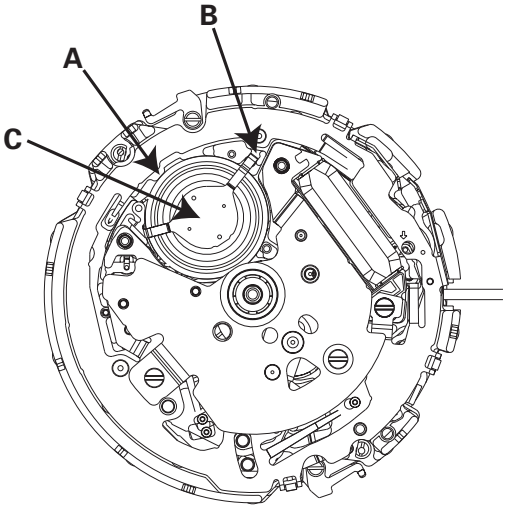
Gently pressing down around the two tubes to securely set the date dial guide spacer to the dial.

<Lubricating>

Lubricate the contact surface between the date dial guide spacer and date dial.



㉔ Rechargeable battery unit



<Disassembling>

Insert the tip of tweezers into the gap at the "A" portion shown in the illustration at right, then gently pry up the rechargeable battery unit to remove.

<Reassembling>

Set the minus lead terminal to the guide post "B" in the illustration at right, press the"C" portion down vertically until the rechargeable battery unit is firmly secured.

Notes:

◆ Take utmost care not to short-circuit the (+) and (-) terminals, as this will deteriorate the battery unit.

◆ Never wash the rechargeable battery unit in water as it contains sensitive electronic parts.

㉕ Oscillating weight bridge screw
㉖ Oscillating weight bridge
㉗ Intermediate wheel for generating rotor
㉘ Generating rotor

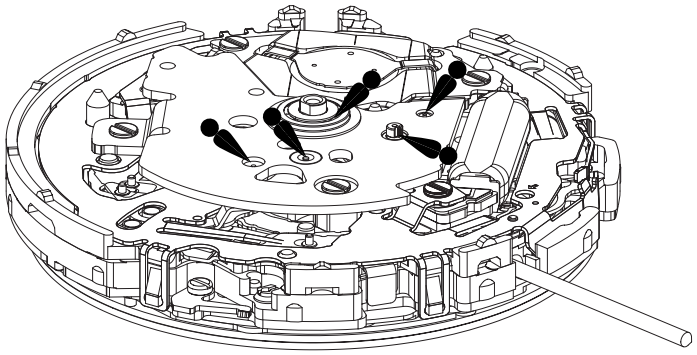
<Disassembling>

When removing the oscillating weight bridge, pay particular attention that the shaft of the pinion of the intermediate wheel for generating rotor penetrates the hole of the oscillating weight bridge.

<Reassembling>

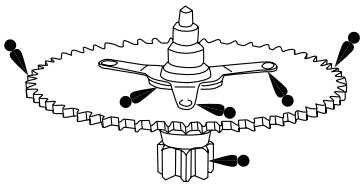
Before screwing in the oscillating weight bridge screws (2 pieces), make sure that the oscillating weight bridge is properly set, with the shaft of the pinion of the intermediate wheel for generating rotor penetrating the hole*, the upper pivots of the generating rotor, minute counting wheel, 1st intermediate wheel for minute counting being secured.

* The hammer guard may tend to bend slightly upwards. In such a case, make sure that the pivots are secured, and then gently hold down the oscillating weight bridge while screwing in the oscillating weight bridge screw.



<Lubricating>

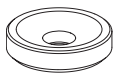
- Lubricate the upper pivots and bearings of the generating stator, minute counting wheel and 1st intermediate wheel for minute counting. (Refer to the illustration above.)
- Refer to the illustration at right for the lubricating positions of the intermediate wheel for generating rotor.



㉙ Hammer guide spacer

<Disassembling>

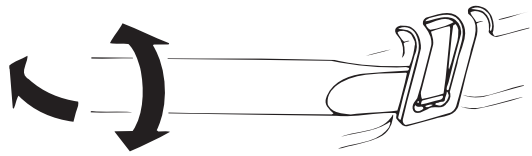
The hammer guide spacer is a small part. Be careful not to loose it.



<Reassembling>

Identify the top side of the hammer guide spacer by a dent illustrated at right. Set the hammer guide spacer only on top of the minute counting wheel.

㉛ Hammer guard



<How to remove>

1. Remove the hammer guard screw.
2. Unhook the four hooks.

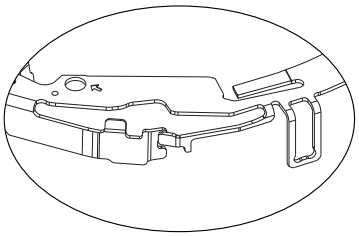
* For the position of the hooks (“a” to “d”), refer to the illusration at the bottom.

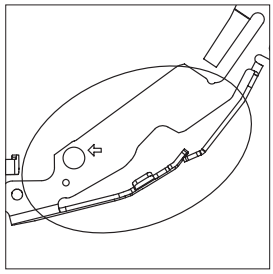
The illustration at right shows how to unhook the four hooks.

<How to install >

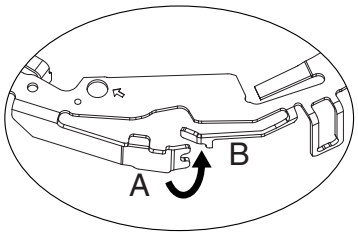
1. Before installing the hammer guard, make sure that the springs of the reset switch are in the correct relationship to each other as shown in the illustration below. If the position of the arms has been altered during disassembling or cleaning the parts, reposition them as directed below.

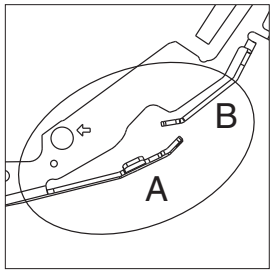
[Correct]





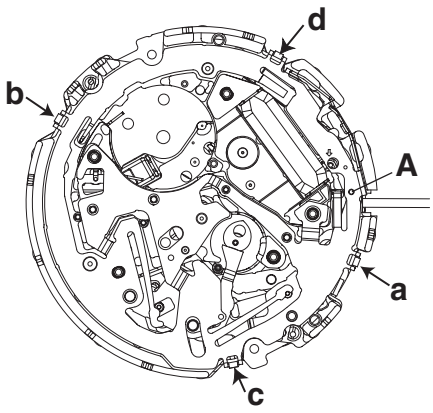
[Incorrect]



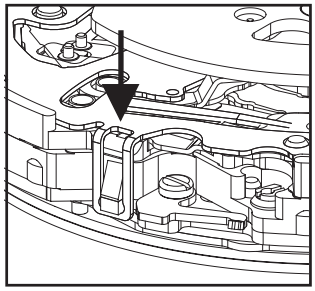


* Gently push the A arm behind the B arm in the direction shown above. While doing this, be careful not to apply pressures on the B arm with tweezers.

2. Firmly set the pin at the “A” position, and then securely hook the four hooks in alphabetical order from “a” to “d”.

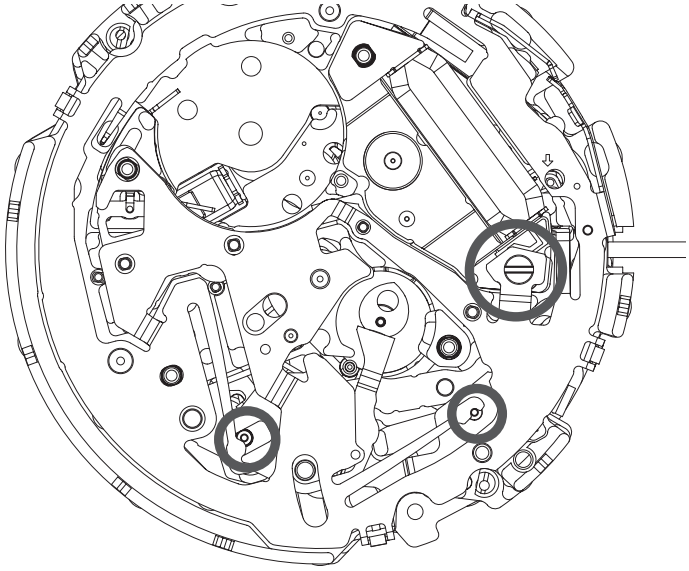


[Positions of the hooks: a, b, c and d]



* To secure the four hooks from “a” to “d”, firmly press each hook downward from above.

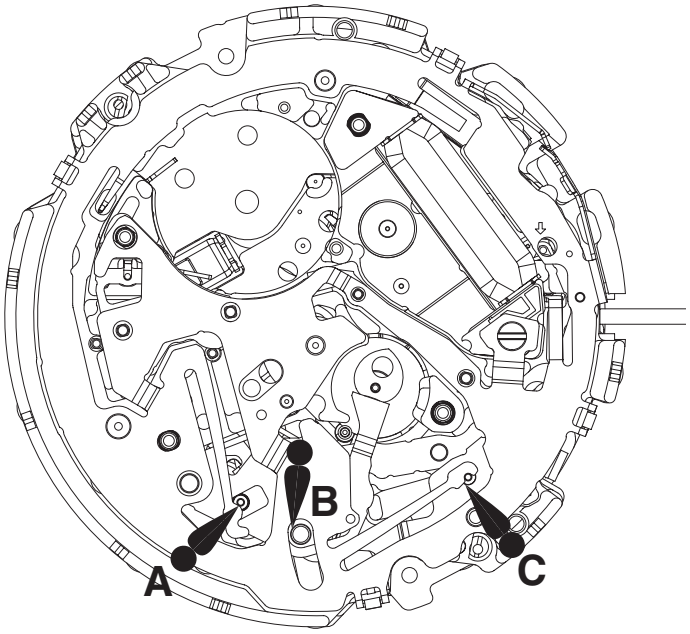
3. Set the hammer guard springs (2 pieces). (Refer to the illustration below.) Be careful not to deform the springs.



4. Screw in the hammer guard screw. Be careful not to break the wire of generating coil block.

<Lubricating>

Lubricate the “A”, “B” and “C” portions shown in the illustration below.



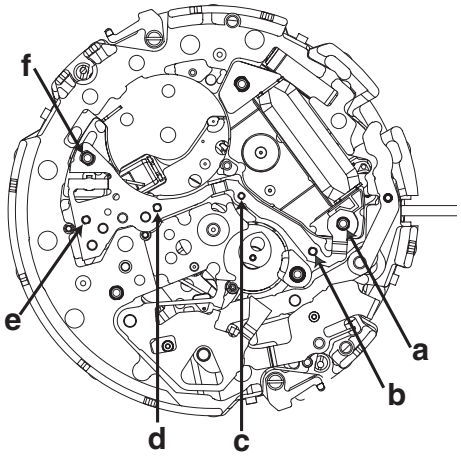
㉜ Generating lead board

<Disassembling>

The six tubes are engaged to the generating lead board. Be careful not to damage the generating lead board in an attempt to remove it, paying attention to the tubes engaged to it.

<Reassembling>

Set the generating lead board to the position where it can be fit into the generating coil block with the six tubes at the “a” to “f” positions securely engaged.



㉝ Generating lead contact spring

- Handle with care not to deform the generating lead contact springs.
- The generating lead contact spring is a small part. Be careful not to loose them.
- The four pieces are the same parts.
- Carefully pick up the edge of the part using tweezers.

㊳ Transmission lever

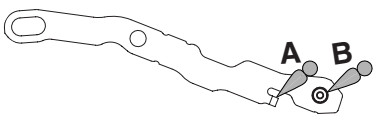
㊴ Hammer

㊵ Operating lever

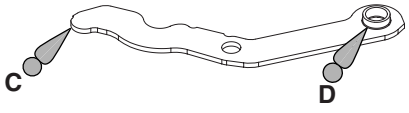
㊶ Transmission lever for hammer

<Lubricating>

Lubricate the “A”, “B” , “C” and “D” portions shown in the illustration below.

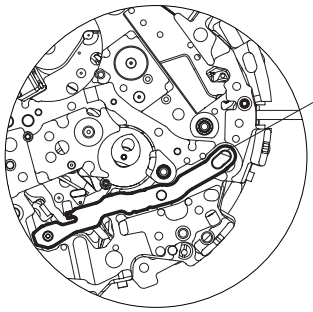


Transmission lever for hammer

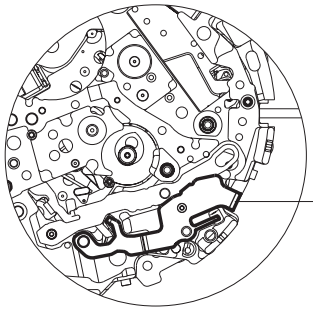


Transmission lever

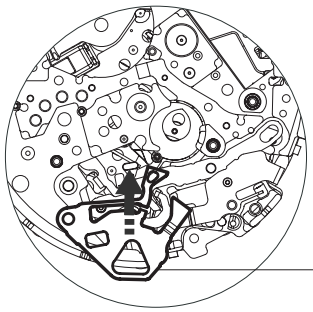
<Order of reassembling>



[Transmission lever for hammer]



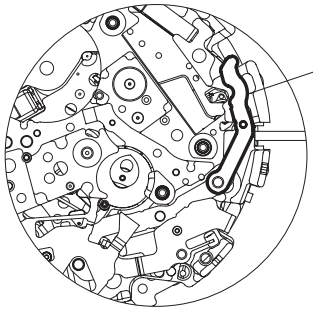
[Operating lever]



[Hammer]

* When installing the hammer, insert the hammer for the second counting wheel under the circuit block plate.

* The installation of the hammer should be completed as illustrated at left.



[Transmission lever]

㊷ Circuit block plate

<Disassembling>

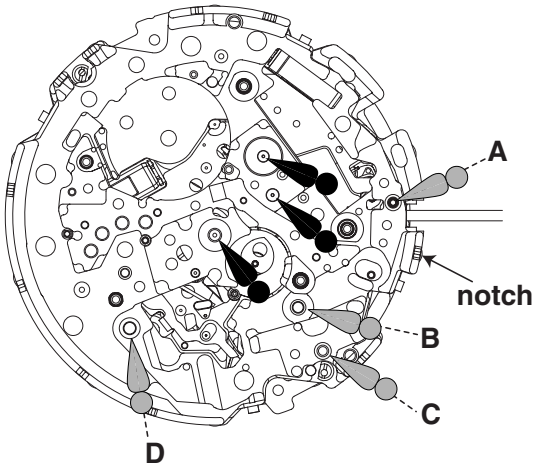
The circuit block plate has a notch on the outer edge for wasy removal from the circuit block spacer. Never apply exessive force when removing the circuit lock plate.

<Reassembling>

Before mounting the circuit block plate, ensure that the upper pivots of the second counting wheel and 1st intermediate wheel for second counting are firmly secured.

<Lubricating>

Lubricate the upper jewel hole of second counting wheel, the lower jewel holes of generating rotor and intermediate wheel for generating rotor, and the “A”,”B”,”C” and “D” portions.



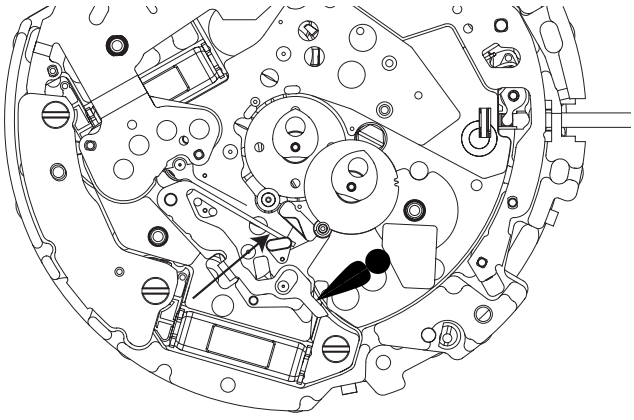
㊸ Chronograph wheel setting lever

<Reassembling>

The chronograph wheel setting lever should be installed before mounting the circuit block plate. After completed the installation of the chronograph wheel setting lever, securely hook the arm of the chronograph wheel setting lever over the circuit block plate.

<Lubricating>

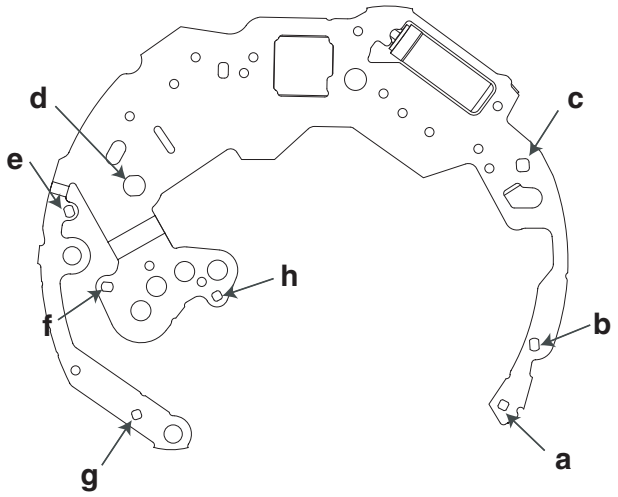
Lubricate the joints with the operating lever. (Refer to the illustration below.)



㊻ Circuit block

<Disassembling>

The tubes of the train wheel bridge are engaged to the circuit block at the "a" to "h" positions illustrated below. Take care not to damage the circuit clock in an attempt to disengage it from the tubes.



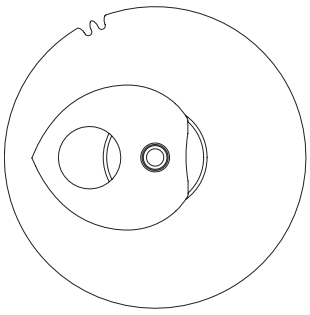
<Reassembling>

Securely set the guide holes of the circuit block at the "a" to "h" positions to the corresponding tubesand pins.

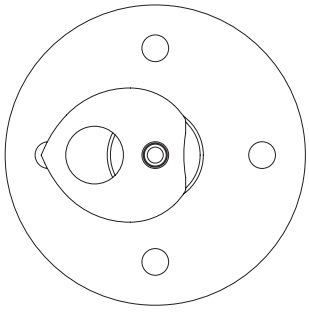
㊼ Minute counting wheel
㊽ Minute counting wheel washer
㊾ Second counting wheel
㊿ Second countng wheel washer

Note:

The minute counting wheel and second counting wheel are similar as both of which are the wheels with a heart cam. Be sure to mount each wheel correctly.



Minute counting wheel



Second coounting wheel

* The second counting wheel has four holes for discrimination.

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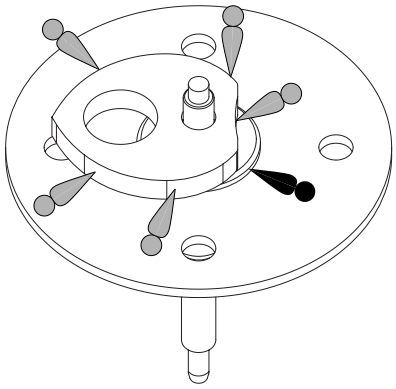
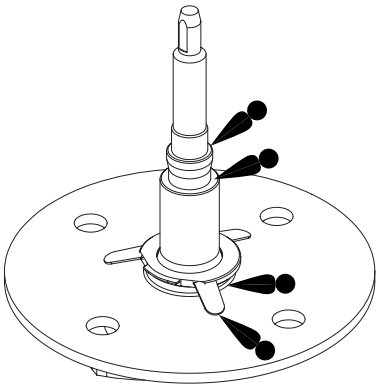
<Lubricating>

Lubricate the heart cams*, inner edge of the heart cam hole, springs and lower pivots of the minute counting wheel and second counting wheel respectively. (Refer to the illustrations below.)





* Lubricate the entire profile of the heart cam with SEIKO Watch oil S-6.

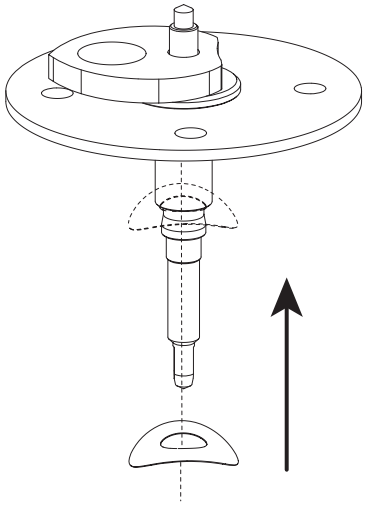
● The illustrations above show the second counting wheel. Lubricate the minute counting wheel in the same manner.

<Reassembling>

❖ **For the minute counting wheel washer and second counting wheel washer**

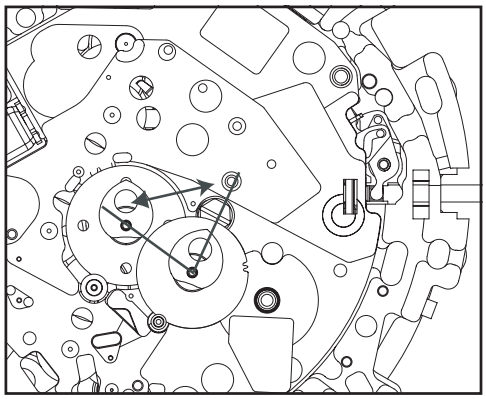
Put the washers with their faces down as illustrated at right.

* Replace the washer with a new one if it is bent or deformed.



❖ **For the minute counting wheel**

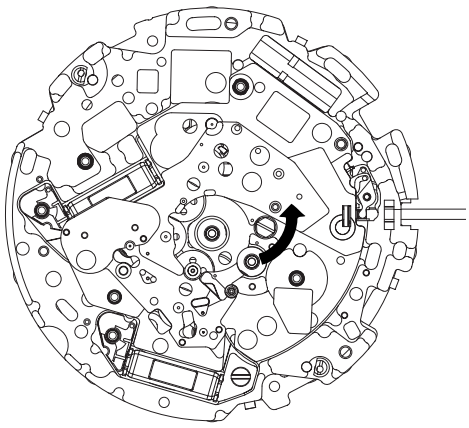
Ensure that the sharp end of the heart cam is positioned within the the range marked in the illustration at right.



㊿① Pin for train wheel bridge

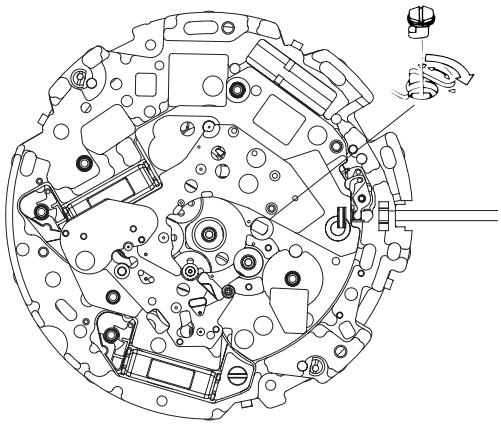
<Disassembling>

Turn the pin 90° counterclockwise to loosen it using a screwdriver .



<Reassembling>

Set the pin properly as shown in the illustration and turn it 90° clockwise using a screwdriver to fix it.



Note:

- ◆ Never turn the pin 90° or more counterclockwise.
- ◆ When turning the pin, never apply undue force to the pin.

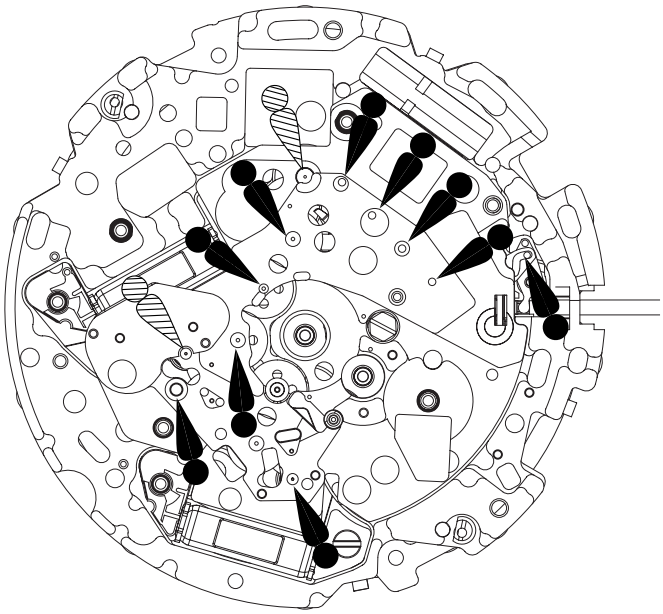
(52) Train wheel bridge

<Reassembling>

Before mounting the train wheel bridge, check the original position of each wheel and ensure that the lower pivots of the rotor and rotor for chronograph are securely engaged. In order to mount the train wheel bridge, securely set the upper pivots of the rotor and rotor for chronograph. Sometimes, you may find it hard to do this as the structure of those parts requires some fine tuning.

<Lubricating>

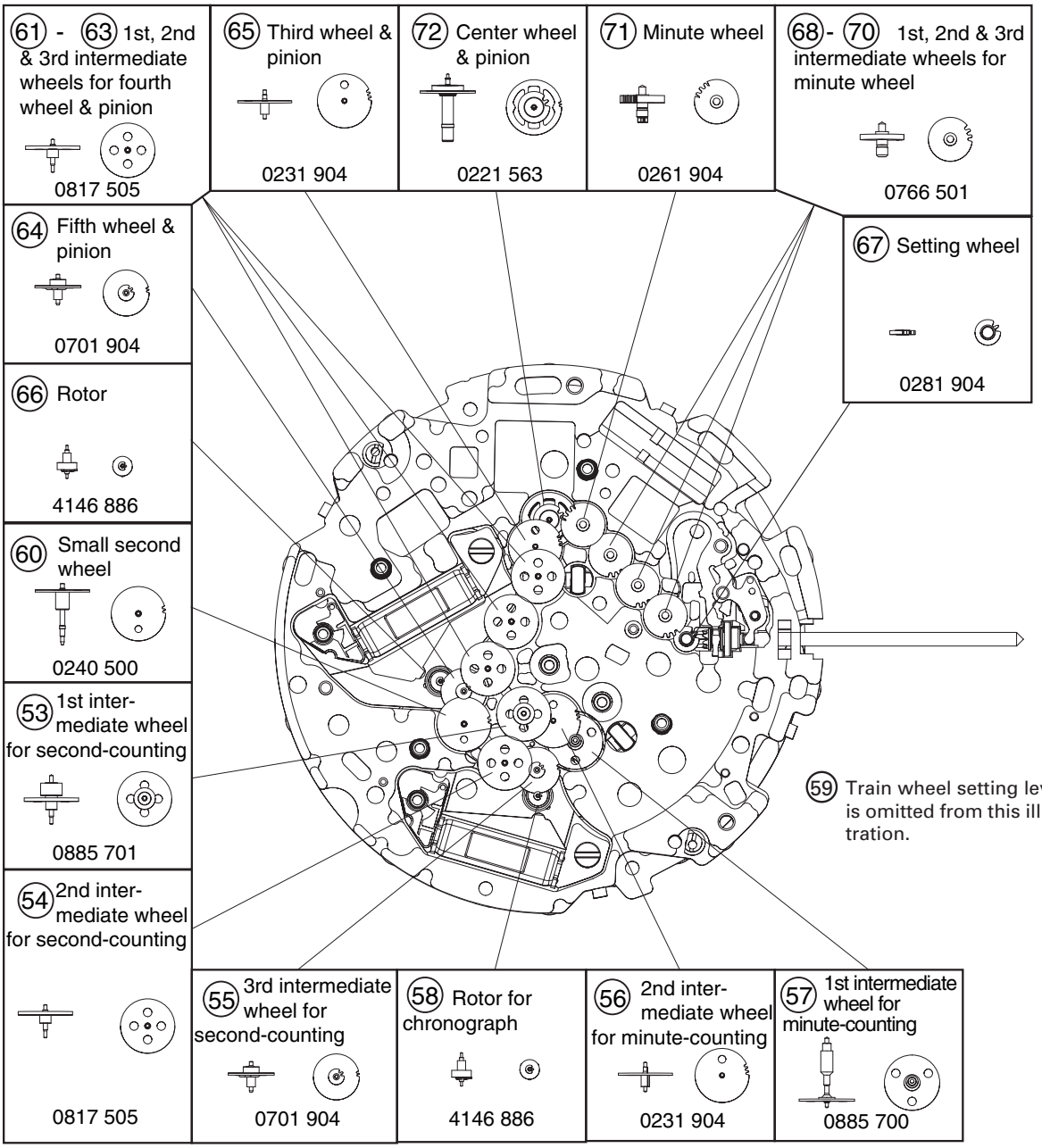
After completed the installation of the pin for train wheel bridge, lubricate the upper pivots of the wheels as illustrated below.



- Rotor, Rotor for chronograph: Moebious F
- Minute wheel,1st, 2nd and 3rd intermediate wheels for second counting, Center wheel & pinion, Fourth wheel,1st, 2nd and 3rd intermediate wheels for forth wheel & pinions, the hole of the train wheel setting lever and the shaft of the chronograph wheel setting lever: Moebious A

(53) 1st intermediate wheel for second-counting - (72) Center wheel & pinion

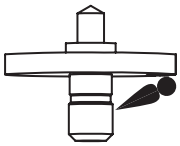
Refer to the illustration below for the setting positions of each part.



Note:

- The third wheel & pinion ((65)) and 2nd intermediate wheel for minute-counting ((56)) are the same parts.
- The 3rd intermediate wheel for fourth wheel & pinion ((61)) , 2nd intermediate wheel for fourth wheel & pinion ((62)) , 1st intermediate wheel for fourth wheel & pinion ((63)) and 2nd intermediate wheel for second-counting ((54)) are the same parts.
- The fifth wheel & pinion ((64)) and 3rd intermediate wheel for second-counting ((55)) are the same parts.
- The rotor ((66)) and rotor for chronograph ((58)) are the same parts.
- The 3rd intermediate wheel for minute wheel ((68)) , 2nd interemediate wheel for minute wheel ((69)) and 1st intermediate wheel for minute wheel ((70))are the same parts.

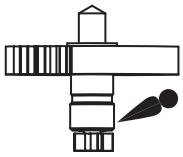
⑱ 3rd intermediate wheel for minute wheel
⑲ 2nd intermediate wheel for minute wheel
⑳ 1st intermediate wheel for minute wheel
㉑ Minute wheel



1st, 2nd and 3rd intermediate wheel for minute wheel

<Lubricating>

Lubricate the side face of the lower pivot of each wheel as illustrated at right.

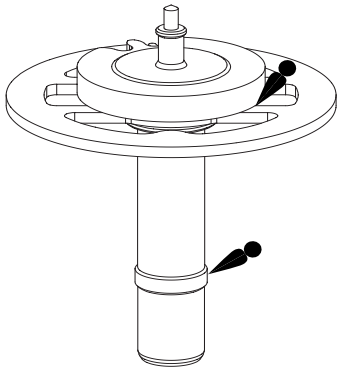


Minute wheel

㉒ Center wheel & pinion

<Lubricating>

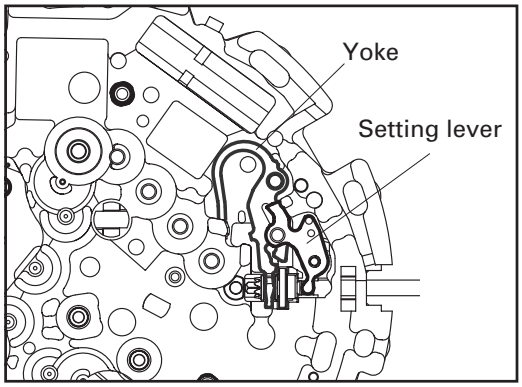
Refer to the illustration at right.



㉙ Setting lever
㉚ Yoke

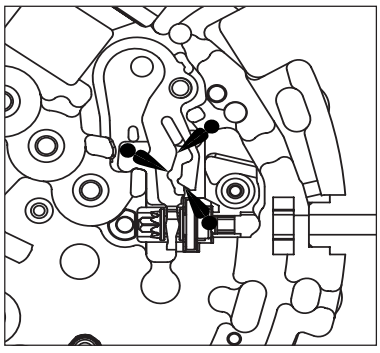
<Reassembling>

Set the setting lever to the normal position.



<Lubricating>

Refer to the illustration at right.



⑧③ Setting stem

<Lubricating>

Refer to the illustration at right.

⑧④ Circuit block spacer

<Disassembling>

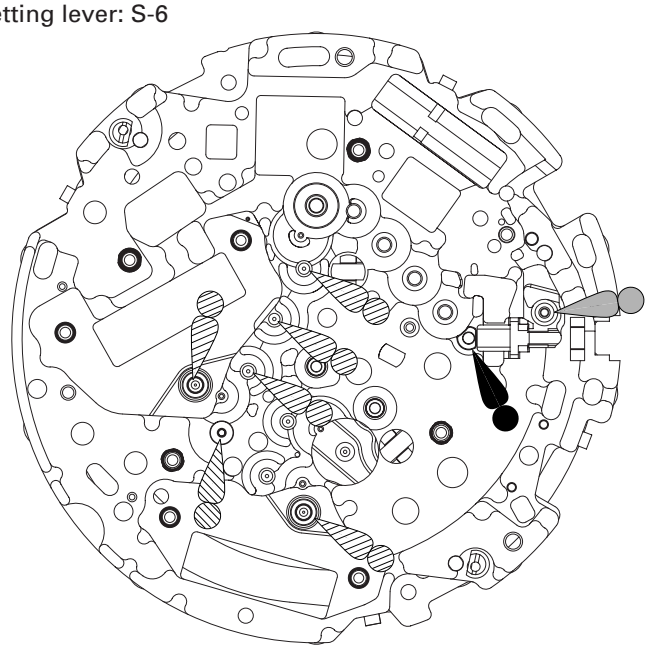
The tubes are engaged to the circuit block spacer. In order to remove the circuit block spacer, gradually lift it up, paying attention to the tubes engaged to it.

<Reassembling>

Gently press down around the tubes, and securely set the circuit block spacer without gap between the circuit block spacer and the main plate.

<Lubricating>

- The lower hole of the rotor, the lower hole of the rotor for chronograph ,the area around the lower hole of the small second wheel and the lower holes of the 1st, 2nd and 3rd intermediate wheels for fourth wheel and pinion: Moebius F
- The shaft of the setting wheel: Moebius A
- The shaft of the setting lever: S-6



IV. VALUE CHECKING AND ADJUSTMENT

● **Coil block resistance**

Coil block:	1.18 kΩ - 1.58 kΩ
Chronograph coil block:	1.18 kΩ - 1.58 kΩ
Generating coil block:	280 Ω - 380 Ω

* Measure the coil block resistance after installing each coil block to the movement, checking that stable measurements are obtained.

● **Current consumption**

For the whole movement:	Less than 0.85 μA (with 1.55 V supplied from a battery, stopwatch not working) Less than 3.50 μA (with 1.55 V supplied from a battery, stopwatch working)
For the circuit block alone:	Less than 0.30 μA (with 1.55 V supplied from a battery)

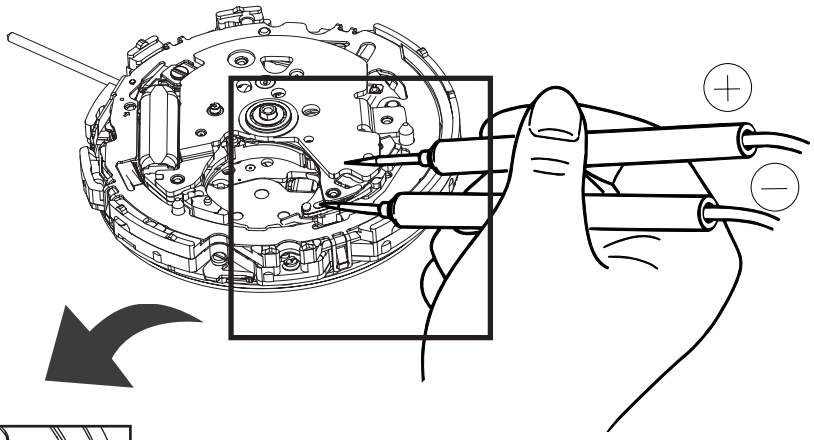
* When using a SEIKO multi-tester S-860, select the following ranges.
For the whole movement : 40 μA Range of SUPPLY V (= 1.55V) & GATE TIME (2S)
For the circuit block alone : 4 μA Range of SUPPLY V (= 1.55V) & GATE TIME (2S)

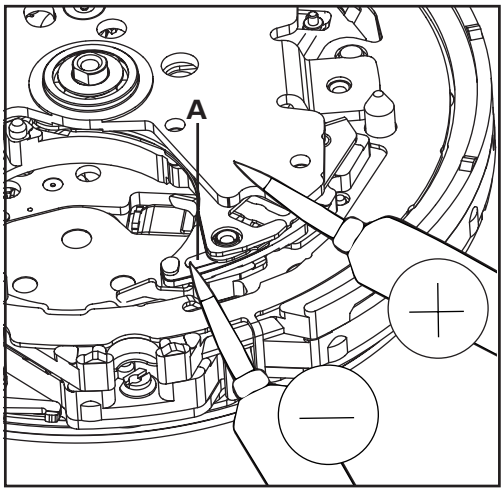
<How to measure the current consumption for the whole movement>

1. Remove the rechargeable battery clamp screw, rechargeable battery clamp, insulator for rechargeable battery, and rechargeable battery unit.

2. Apply the minus (-) terminal of the tester to the “A” portion in the illustration below and the plus (+) terminal to the hammer guard.

3. Wait for approximately 20 to 30 seconds until the current consumption becomes stable. When the current consumption shows stable measurements, read the measurement.



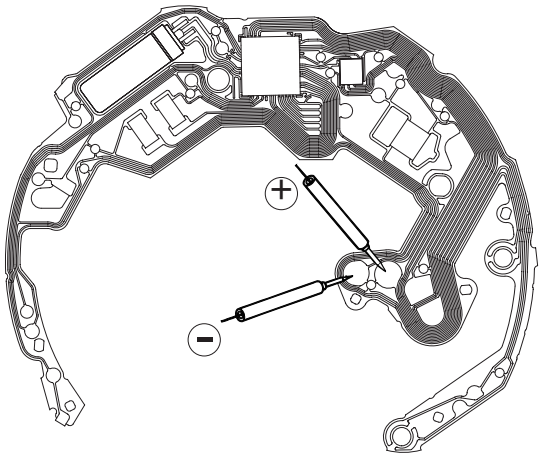


* Light may increase the current consumption, resulting in an inaccurate measurement. Protect the movement from light with a black cloth or the like, and make a measurement again.

* When the current consumption for the whole movement exceeds the standard value, measure the current consumption for the circuit block alone. If the current consumption for the circuit block alone is within the standard value range, a driving pulse may be generated. In that case, overhaul and clean the movement parts, and then measure the current consumption for the whole movement again.

<How to measure the current consumption for the circuit block alone>

1. Connect the tester as shown in the illustration.



2. When stable measurements are obtained, read the current consumption.

Note:
The current consumption measurement for the circuit block alone is so susceptible to light that a value higher than the actual measurement may be obtained if the circuit block is exposed to light. Protect the circuit block from light with a black cloth or the like, and then measure the current consumption again

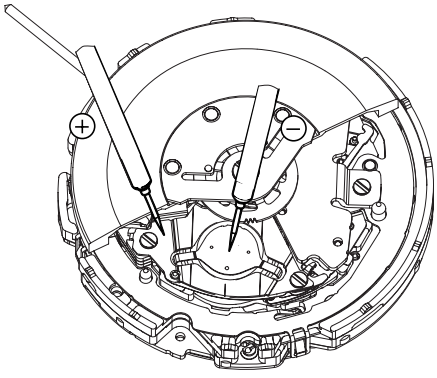
<Checking the automatic generating system>

1. Apply the probes of the tester as shown in the illustration and measure the voltage of the rechargeable battery. The obtained voltage is called the "initial voltage".

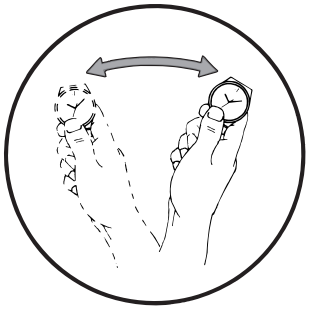
Note:

When applying the minus probe of the tester to the rechargeable battery unit, take care not to shortcircuit the lead terminal (-) and the rechargeable battery clamp.

If a short-circuit has occurred, leave the watch untouched for more than ten minutes, and measure the voltage again, checking that stable measurements are obtained.



2. Close the case back tentatively, and swing the watch from side to side 200 times at a rate of 2 to 3 swings a second, making an arc of approximately 20 cm.



3. Within 3 minutes after swinging the watch, measure the voltage of the rechargeable battery in the same manner as in step "1" above.

4. Refer to the table below, and decide whether the automatic generating system is normal or defective.

Initial voltage and guideline of normal/defective decision

Initial Voltage	Guideline of normal/defective decision
0.45 V - 1.0 V	After Charging, the voltage of rechageable battery has increased 0.1 V or more from the initial voltage.
1.01 V - 1.2 V	After Charging, the voltage of rechageable battery has increased 0.05 V or more from the initial voltage.

* The guidelines specified in the above table are applicable only when the initial voltage is within the range between 0.45 V and 1.20V.

* The amount of electricity generated by swinging the watch varies depending on the manner in which you swing it, such as the rate of swinging and the size of the swinging arc. Please note, therefore, that the checking through the procedure above provides only the guideline of normal/detectable decision.

<For your information>

1. Number of swings and power reserve

When the power reserve in the rechargeable battery is depleted and the watch stops completely, swinging the watch approximately 500 times at a rate of 2 to 3 times a second will start the second hand movement at normal one-second intervals instead of two-second intervals. If the second hand still moves at two-second intervals after 500 swings, continue swinging the watch further until it moves at one-second intervals.

When the second hand moves at one-second intervals, approximately 200 swings will reserve the power required to operate the watch for one day.

2. The number of days that the watch is worn and power reserve

Wearing the watch for one day (for twelve hours) will accumulate the power required to operate the watch for additional two days.

Example

If you wear the watch for 12 hours everyday over a period of one month, the power required to operate the watch for approximately two months will be secured in the rechargeable battery.

V. FUNCTION CHECKING

● **Stopwatch function checking**

1. With each press of button A, the stopwatch second hand starts and stops repeatedly, and the measured times are accumulated. The movement of the stopwatch second hand and stopwatch minute hand is interlocked.

2. By pressing the button B, the two stopwatch hands return to the 0 position instantaneously.

3. If the stopwatch is left working, it measures up to 48 minutes and automatically stops.

2004-09-01