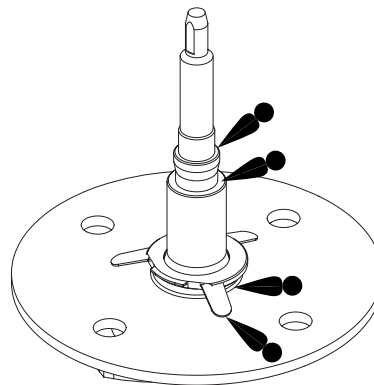
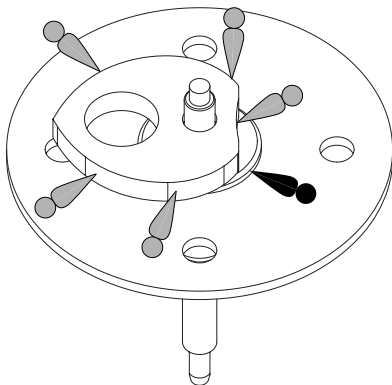


<Lubricating>

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.

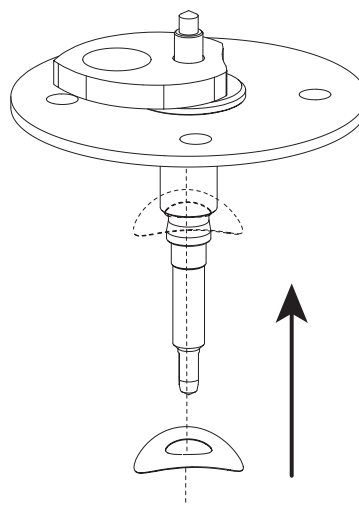
- The illustrations above show the second counting wheel. Lubricate the minute counting wheel in the same manner.

<Reassembling>

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

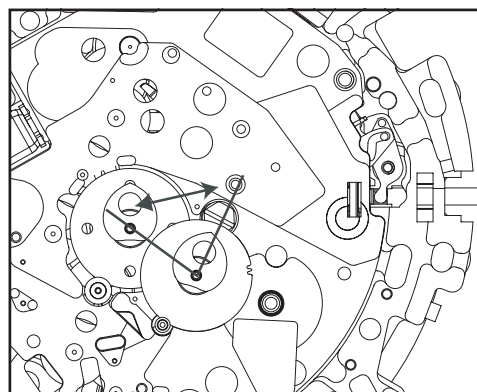
Put the washers with their faces down as illustrated at right.

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



❖ For the minute counting wheel

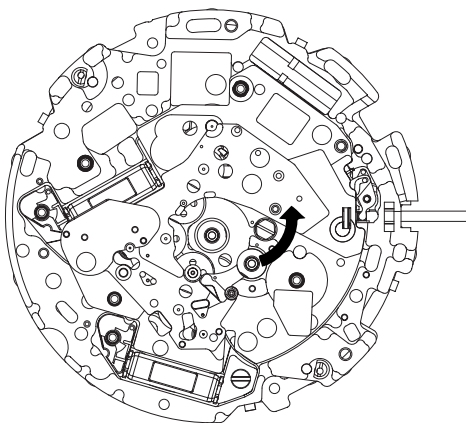
Ensure that the sharp end of the heart cam is positioned within the the range marked in the illustration at right.



51 Pin for train wheel bridge

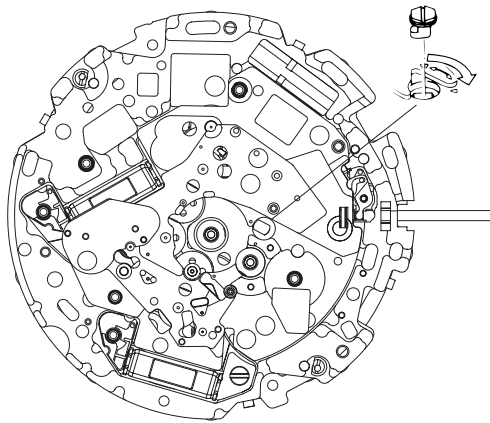
<Disassembling>

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.

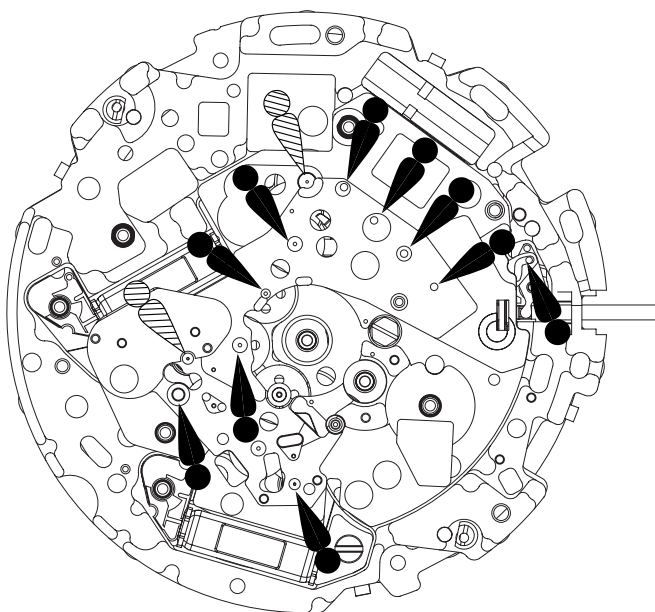
52 Train wheel bridge

<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>

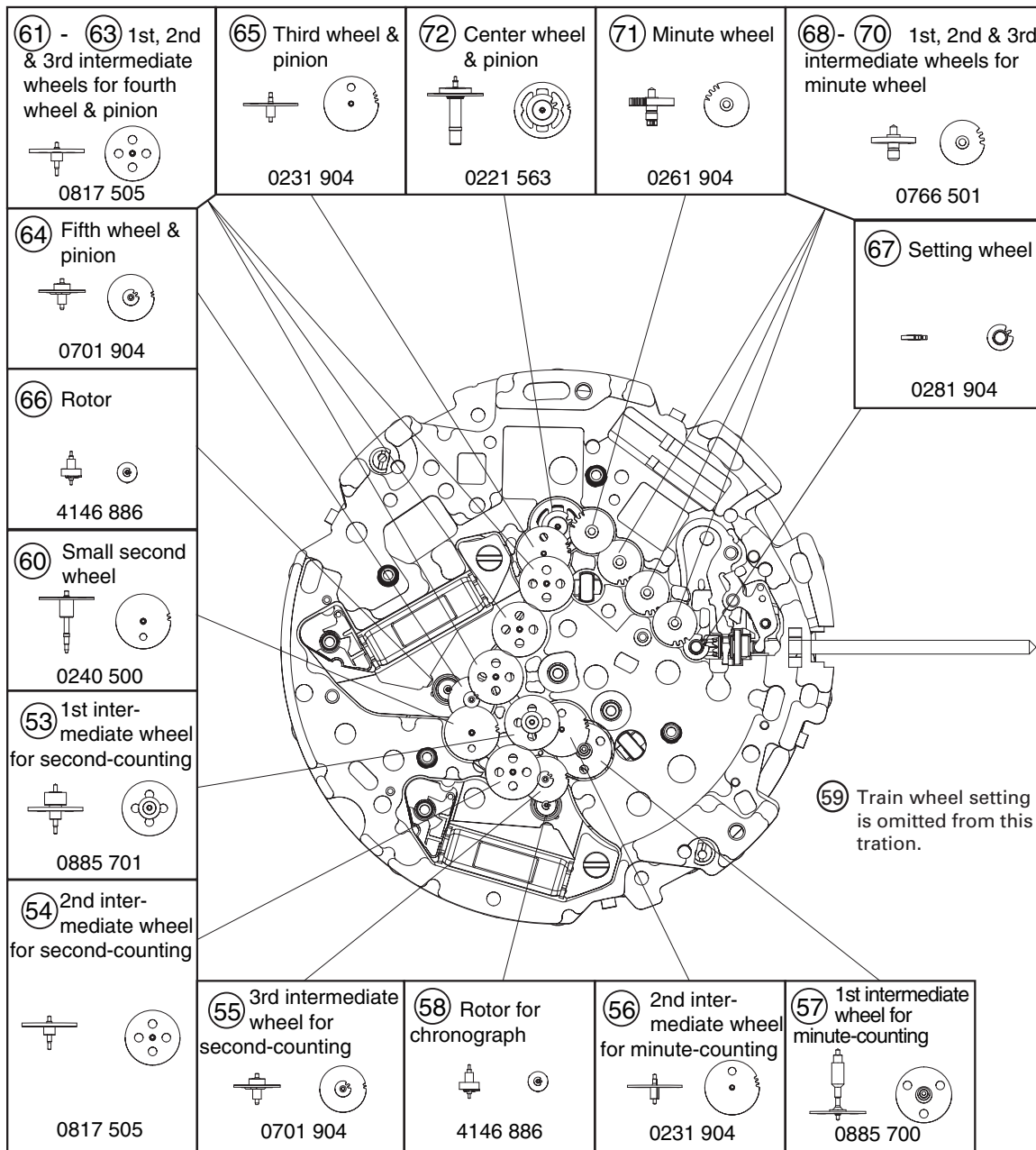
After completed the installation of the pin for train wheel bridge, lubricate the upper pivots of the wheels as illustrated below.



- ◆ 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.



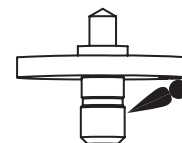
Note:

- ◆ 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 intermediate wheel for minute wheel (⑥⑨) and 1st intermediate wheel for minute wheel (⑦⑦) are the same parts.

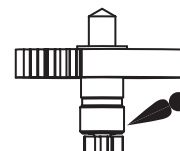
- ⑥8 3rd intermediate wheel for minute wheel
- ⑥9 2nd intermediate wheel for minute wheel
- ⑦0 1st intermediate wheel for minute wheel
- ⑦1 Minute wheel

<Lubricating>

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



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

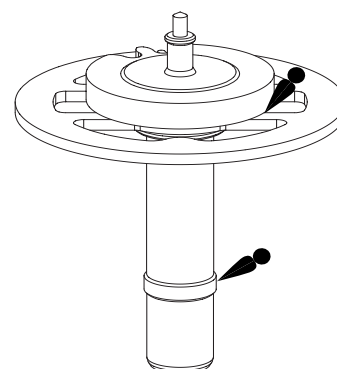


Minute wheel

- ⑦2 Center wheel & pinion

<Lubricating>

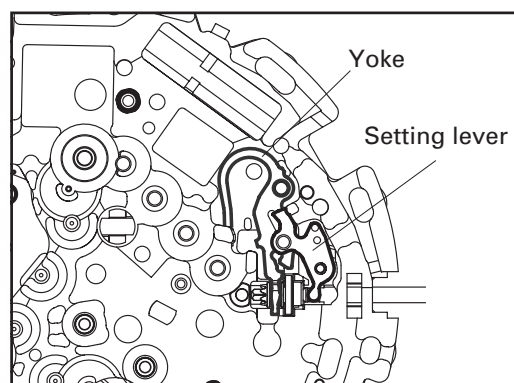
Refer to the illustration at right.



- ⑦9 Setting lever
- ⑧0 Yoke

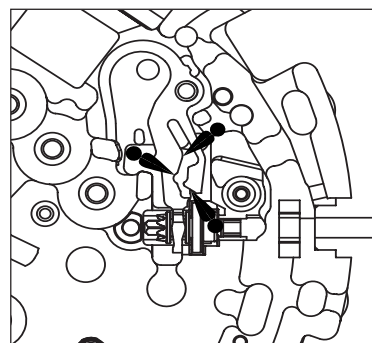
<Reassembling>

Set the setting lever to the normal position.



<Lubricating>

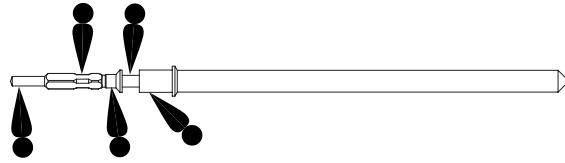
Refer to the illustration at right.



83 Setting stem

<Lubricating>

Refer to the illustration at right.



84 Circuit block spacer

<Disassembling>

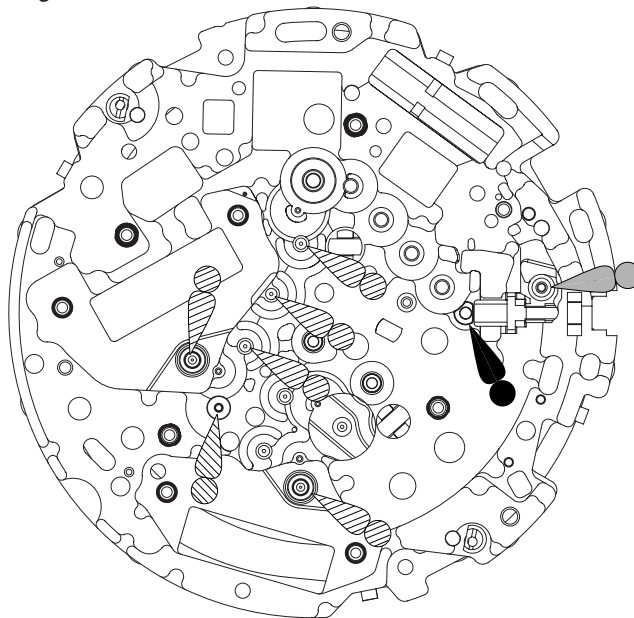
The tubes are engaged to the circuit block spacer. In order to remove the circuit block spacer, gradually lift it up, paying attention to the tubes engaged to it.

<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 k Ω - 1.58 k Ω
Chronograph coil block:	1.18 k Ω - 1.58 k Ω
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.

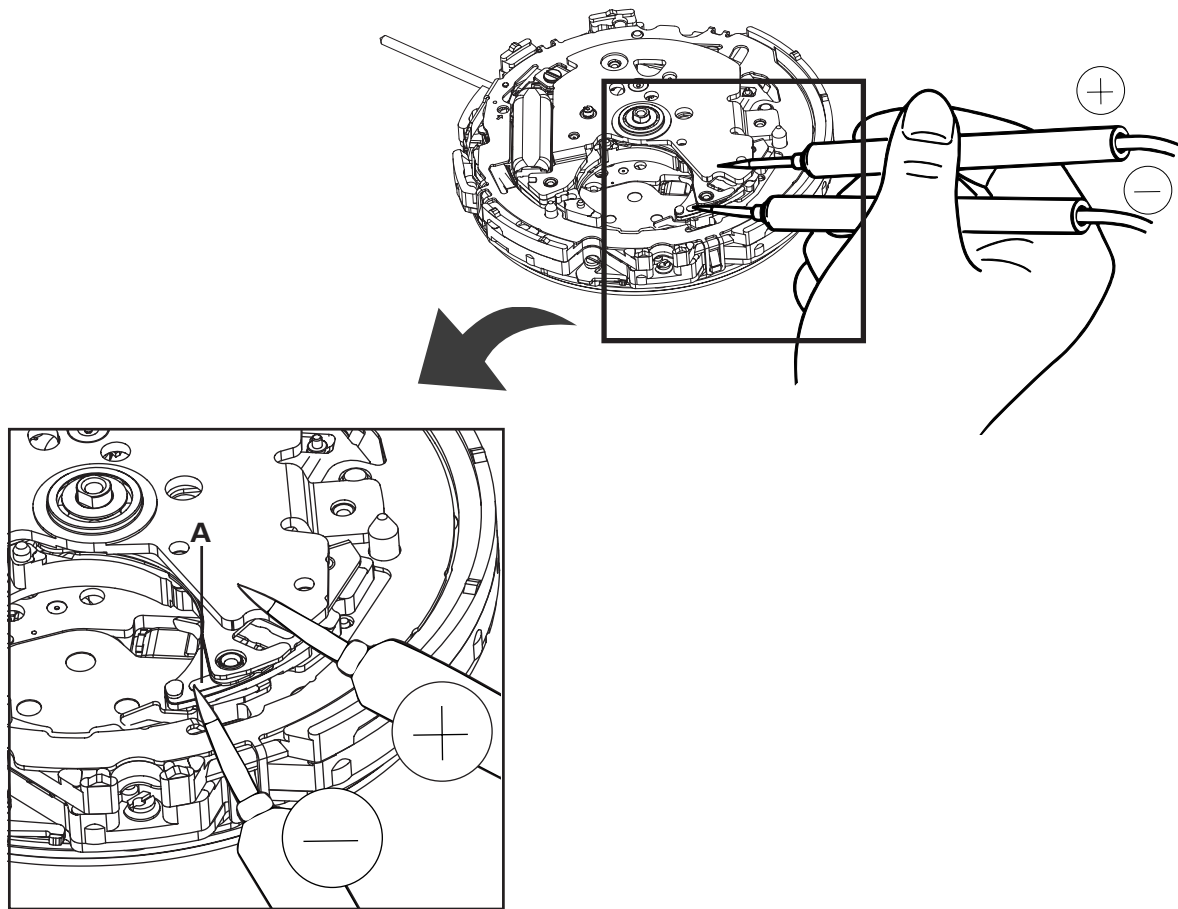
● Current consumption

For the whole movement:	Less than 0.85 μ A (with 1.55 V supplied from a battery, stopwatch not working) Less than 3.50 μ A (with 1.55 V supplied from a battery, stopwatch working)
For the circuit block alone:	Less than 0.30 μ A (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 μ A Range of SUPPLY V (= 1.55V) & GATE TIME (2S)
For the circuit block alone : 4 μ A Range of SUPPLY V (= 1.55V) & GATE TIME (2S)

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

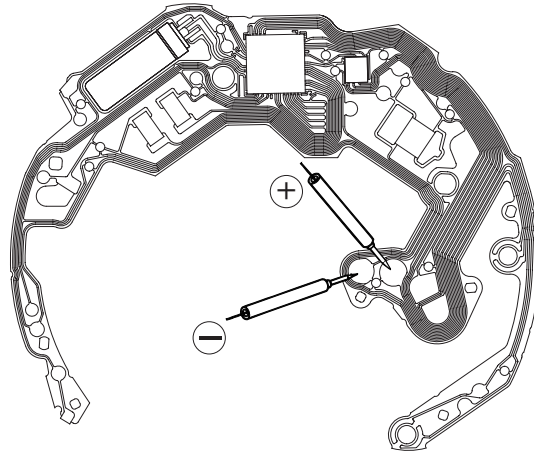
1. Remove the rechargeable battery clamp screw, rechargeable battery clamp, insulator for rechargeable battery, and rechargeable battery unit.
2. Apply the minus (-) terminal of the tester to the "A" portion in the illustration below and the plus (+) terminal to the hammer guard.
3. Wait for approximately 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

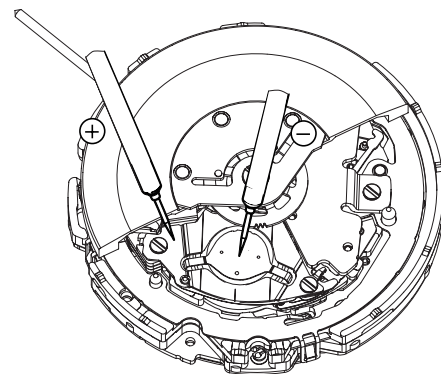
<Checking the automatic generating system>

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".

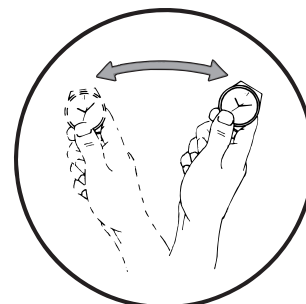
Note:

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 rechargeable battery has increased 0.1 V or more from the initial voltage.
1.01 V - 1.2 V	After Charging, the voltage of rechargeable 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.

