
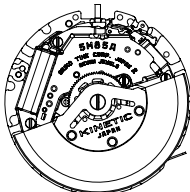
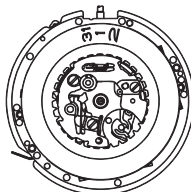


# PARTS LIST/TECHNICAL GUIDE

## KINETIC Cal. 5M85A

### [SPECIFICATIONS]

Item		Cal. No.	5M85A
 <ul style="list-style-type: none"> <li>• 4 hands (Hour, Minute, Second, and 24-hour hands)</li> <li>• Calendar Date (date dial) Day</li> </ul>		Movement	  <ul style="list-style-type: none"> <li>• Diameter Outside : Ø 27.6 mm Casing : Ø 27.0 mm</li> <li>• Height: 4.8 mm</li> </ul>
Interval of hands movements		1 second	
Driving system		Step motor (Load compensated driving pulse type)	
Additional function		<ul style="list-style-type: none"> <li>• Power reserve indicator</li> <li>• Energy depletion forewarning function</li> <li>• Overcharge prevention function</li> <li>• Electronic circuit reset function</li> <li>• Train wheel setting device</li> <li>• Independent adjustment of hour hand</li> <li>• Date calendar (Date and hour hand are set simultaneously)</li> <li>• 24-hour hand</li> </ul>	
Crown operation	Normal position	Free	
	1st click position	Hour-hand independent adjustment	
	2nd click position	Time setting (Hour and Minute)	
Loss/Gain		Monthly rate: less than 15 seconds (worn on the wrist at temperature range between 5 and 35 °C)	
Regulation system		Nil	
Gate time for rate measurement		Use 10-second gate	
Current consumption		Movement:	less than 0.8uA
		Circuit block:	less than 0.2uA
Coil resistance		Coil block:	1.70 - 2.10 KΩ
		Generating coil block:	280 - 380Ω
Power supply	Power generator	Automatic generating system	
	Rechargeable battery	MT920 Manganese titanium lithium rechargeable battery	
	Operating voltage range	0.9 V - 2.2 V	
	Duration of charge	From full charge to stoppage: Approx. 6 months	
Number of jewels		7 jewels	

SEIKO WATCH CORPORATION

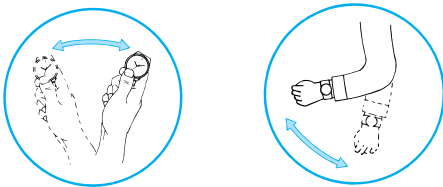
FEATURES

SEIKO KINETIC Cal. 5M85 is an analogue quartz watch equipped with the Kinetic technology developed by SEIKO. It generates the electric energy to power the watch, utilizing the movement of your body, and stores it in the rechargeable battery, which requires no periodical replacement unlike conventional button-type batteries.

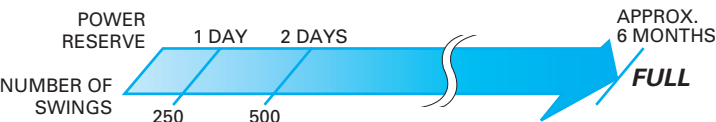
HOW TO CHARGE THE WATCH

1. By swinging the watch

1. When the watch stops completely, or if you find the second hand moving at two-second intervals, swing the watch from side to side at a rate of twice a second.



2. 250 swings will reserve up to 1 day of power.  
The second hand will start moving at one-second intervals.

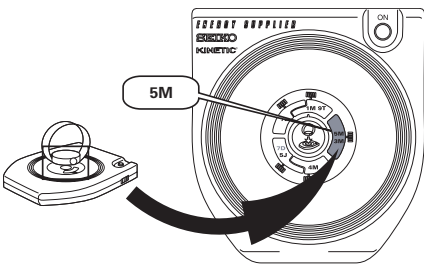


\* It is recommended that the watch be swung further until 2 days of power is reserved.  
As a guideline of recharging, additional 250 swings, about 500 swings in total will reserve 2 days of power.

2. By using the KINETIC Energy Supplier YT02A

Set the crown to the 5M position.

- Make sure that the watch is correctly positioned as it may affect the amount of power generated.
- The amount of power generated may vary depending the models of the watch.



POWER RESERVE INDICATOR

Cal. 5M85A is equipped with a power reserve indicator. The current power reserve can be checked by reading the position of the second hand after pressing the button at the 2 o'clock position.

	5 seconds	10 seconds	20 seconds	30 seconds
QUICK MOVEMENT OF SECOND HAND*				
POWER RESERVE	More than 1 day	More than 7 days	More than approximately 1 month	Approximately 6 months

- \* To allow easy reading of the second hand, press the button when the second hand is at the 12 o'clock position.
- \* Toward the end of the quick movement, the second hand will gradually slow down until it stops.
- \* The second hand will resume normal movement after the indicated 5, 10, 20 or 30 seconds have elapsed.

# PARTS LIST

Cal. 5M85A

Disassembling procedures Figs. :

① → ⑤④

Reassembling procedures Figs. :

⑤④ → ①

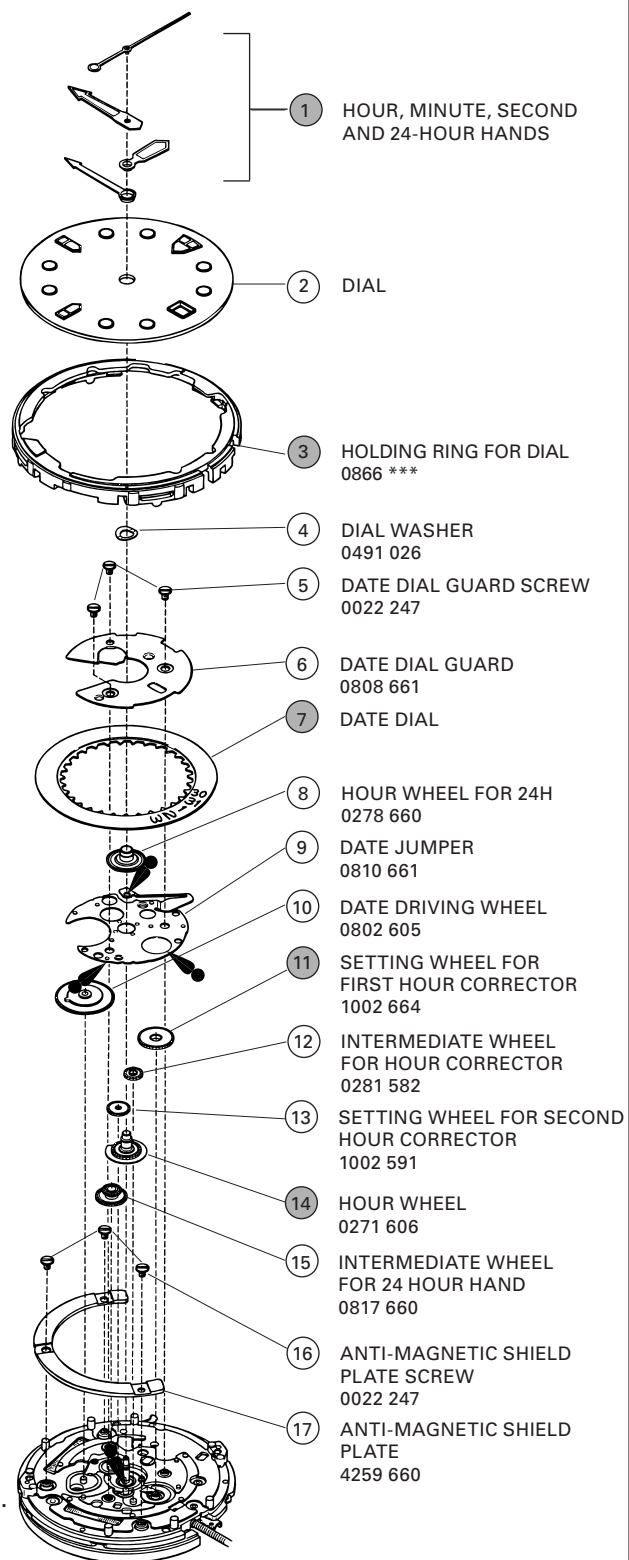
**Lubricating: Types of oil**

● AO-3

▨ AO-2

**Oil quantity**

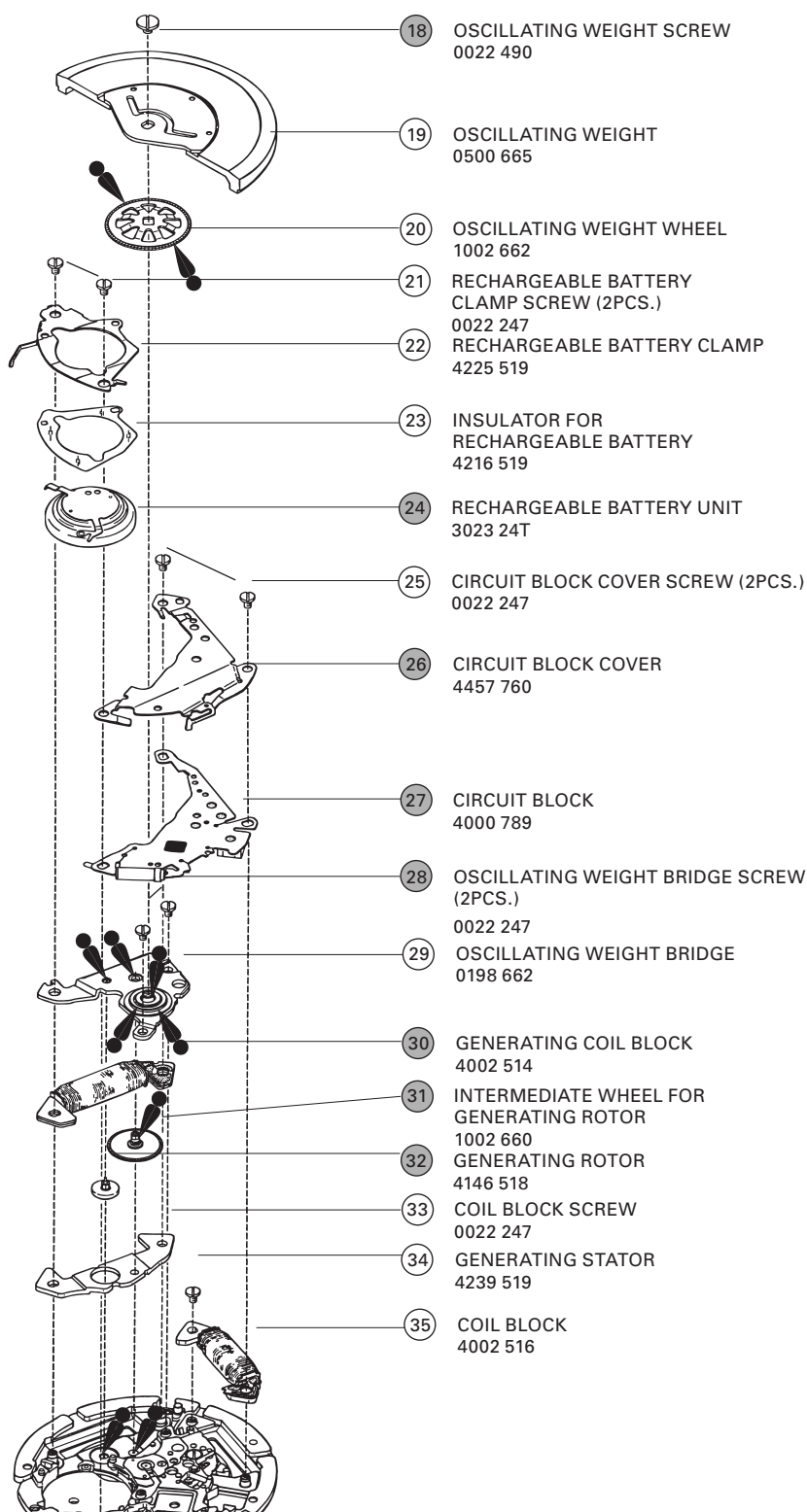
○ Normal quantity



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

# PARTS LIST

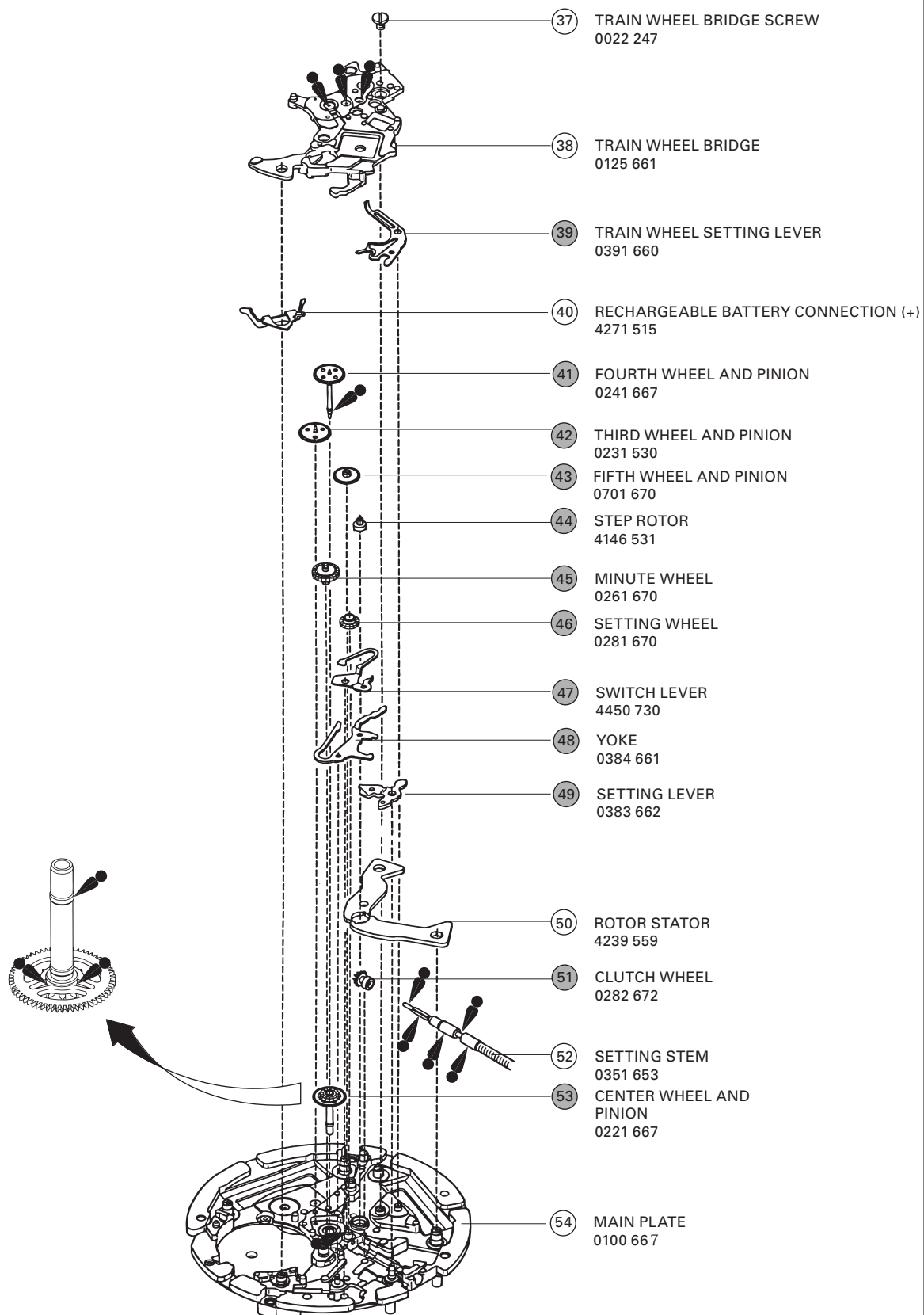
Cal. 5M85A



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

# PARTS LIST

Cal. 5M85A



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

**Remarks**

● **How to find the correct parts, if not determined by 4 digit caliber number**

Following parts are determined based on the design of watches, such as hands height, dial color, and design of cases. Please refer to the SEIKO WATCH PARTS CATALOGUE in order to choose corresponding parts.

③ **HOLDING RING FOR DIAL**

The type of HOLDING RING FOR DIAL is determined based on the design of cases.



Check the case number and refer to "SEIKO Casing Parts Catalogue" to choose a corresponding holding ring for dial.

⑦ **DATE DIAL**

Part code	Position of crown and calendar frame	Color of figure	Color of background
0878 662	3 o'clock	White	Black

The type of date dial is determined based on the design of cases. Check the case number and refer to "SEIKO Casing Parts Catalogue" to choose a corresponding date dial.

• **Screws**

	0022 247
	<ul style="list-style-type: none"> <li>• Date dial guard screw (3 pcs.)</li> <li>• Anti-magnetic shield plate screw (3 pcs.)</li> <li>• Capacitor clamp screw (2 pcs.)</li> <li>• Circuit block cover screw (2 pcs.)</li> <li>• Oscillating weight bridge screw (2 pcs.)</li> <li>• Coil block screw (1 pc.)</li> <li>• Train wheel bridge screw (1 pc.)</li> </ul>
	0022 490
	<ul style="list-style-type: none"> <li>• Oscillating weight screw (1 pc.)</li> </ul>

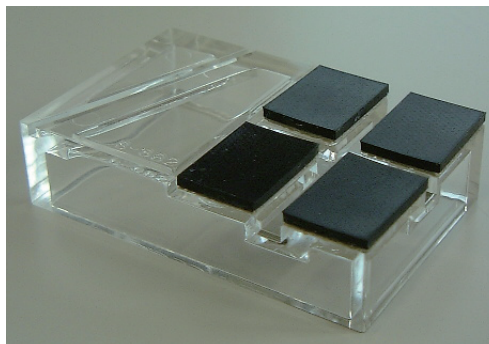
# PARTS LIST

Cal. 5M85A

- Tools and consumables required for disassembling/reassembling

- Movement holder

UNIVERSAL MOVEMENT HOLDER (S-682)



- Watch oils

SEIKO watch oils (AO-3 and AO-2)

AO-3



AO-2



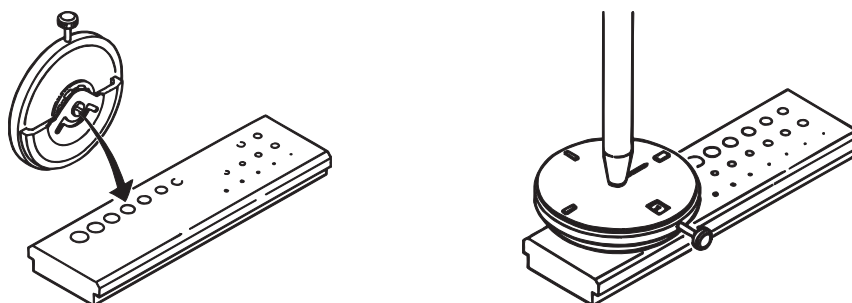
- The explanation here is only for the particular points of Cal. 5M85A.

## I. Remarks on disassembling and reassembling

For disassembling and reassembling, be sure to use the universal movement holder.

### ⑧ HOUR, MINUTES AND SECOND HANDS

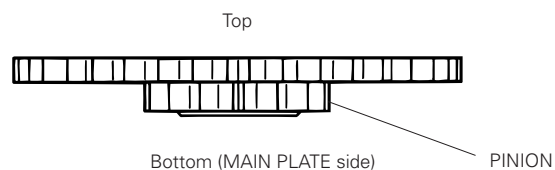
Place the movement on the riveting plate as shown in the illustration with the OSCILLATING WEIGHT down, so that the OSCILLATING WEIGHT SCREW is not damaged. Then, press in the hands.



### ⑪ Setting wheel for first hour corrector

#### • How to install

Install the setting wheel for first hour corrector as shown below.

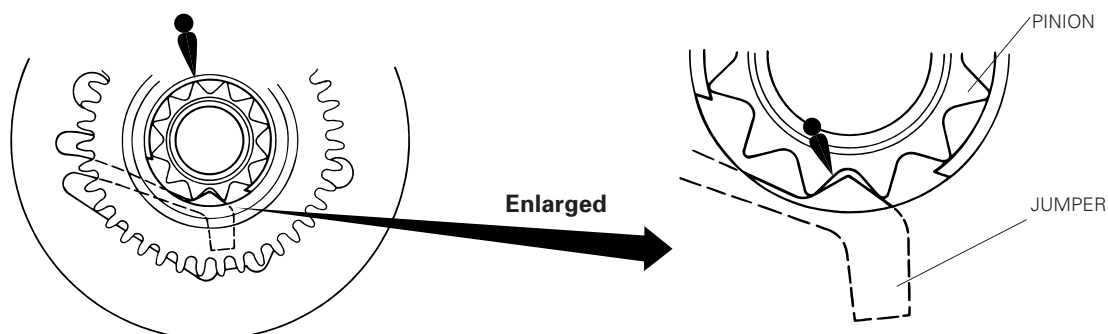




## ⑭ Hour wheel

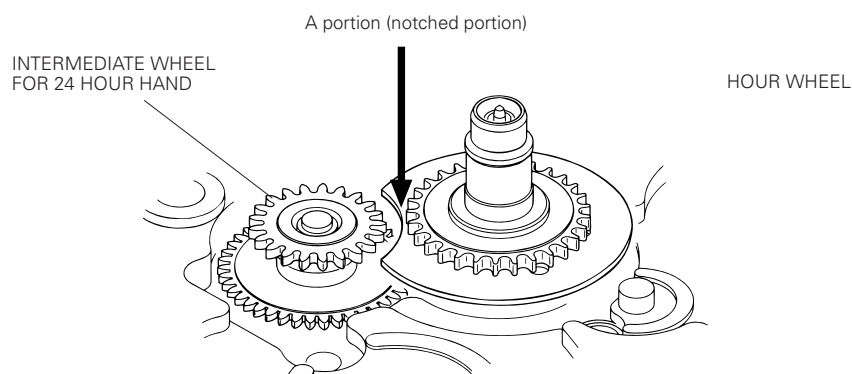
### • Lubricating

Refer to the illustrations below.



### • How to install

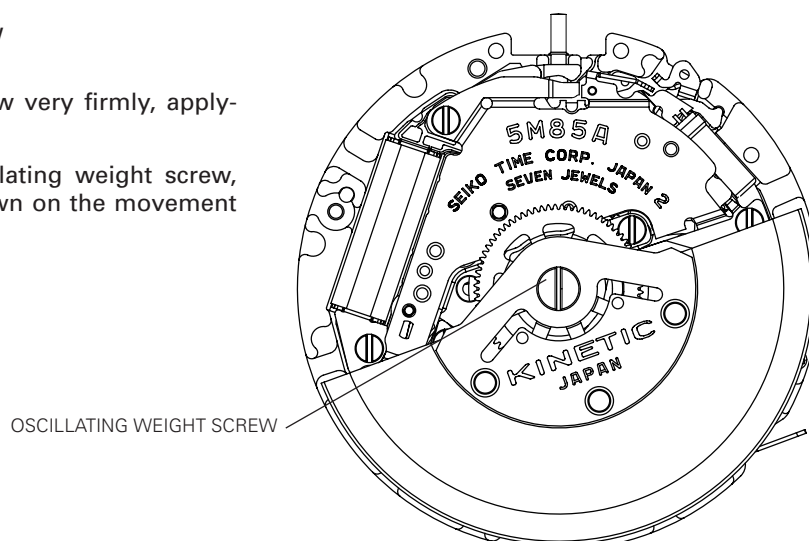
Set the notched portion of the hour wheel (A portion in the illustration below) at the intermediate wheel for 24 hour hand side.



## ⑮ OSCILLATING WEIGHT SCREW

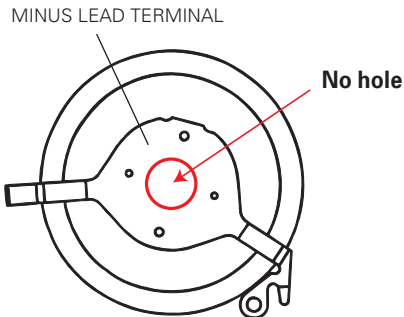
Tighten the oscillating weight screw very firmly, applying more force than usual.

**Note:** When tightening the oscillating weight screw, be careful not to press down on the movement hard with the screwdriver.

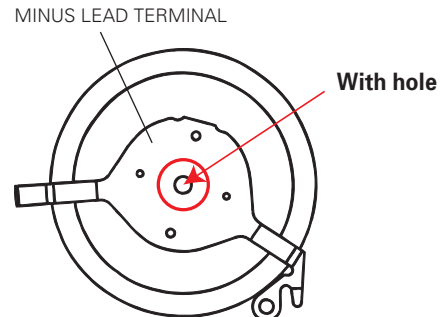


## 24 RECHARGEABLE BATTERY UNIT

Though the RECHARGEABLE BATTERY UNIT for Cal. 5M8 Series is of a completely different from Cal. 5M6 Series, they have a close resemblance in shape. They can be discriminated by the shapes of their minus lead terminals as illustrated below. Make sure to use appropriate RECHARGEABLE BATTERY UNIT, in servicing by checking this.



[ RECHARGEABLE BATTERY UNIT  
for Cal. 5M8 Series ]



[ RECHARGEABLE BATTERY UNIT  
for Cal. 5M6 Series ]

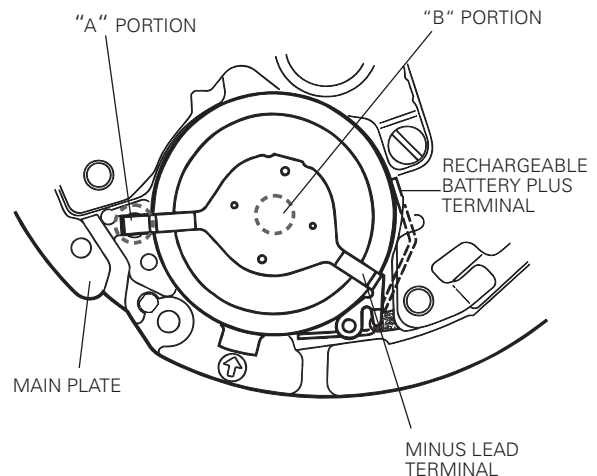
### • How to remove

Insert the tip of tweezers into the "C" portion gap in the illustration at right, and pry up the RECHARGEABLE BATTERY UNIT to remove it.

### • How to install

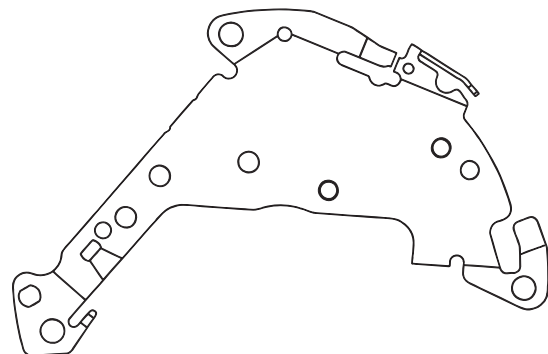
Set the "A" portion of the minus lead terminal to the hole of the main plate, and push the "B" portion down vertically so that the RECHARGEABLE BATTERY UNIT is well seated in position.

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



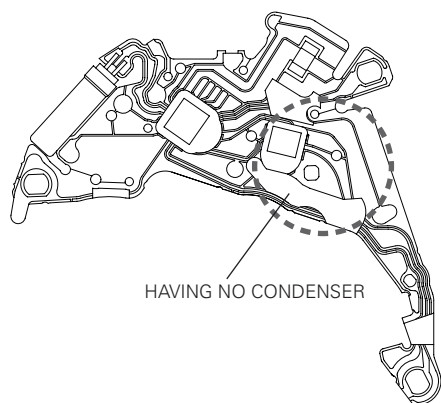
## 26 CIRCUIT BLOCK COVER

CIRCUIT BLOCK COVER supplied as spare part has no such printings on it as calibre number and numeral indicating hand installation height.

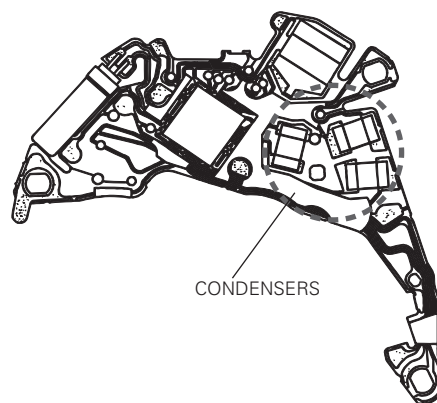


## ②⑦ CIRCUIT BLOCK

The CIRCUIT BLOCK for Cal. 5M8 Series and that for Cal. 5M6 Series have a close resemblance in shape. They can be discriminated by the design as shown in the illustration.



[ CIRCUIT BLOCK for Cal. 5M8 Series ]

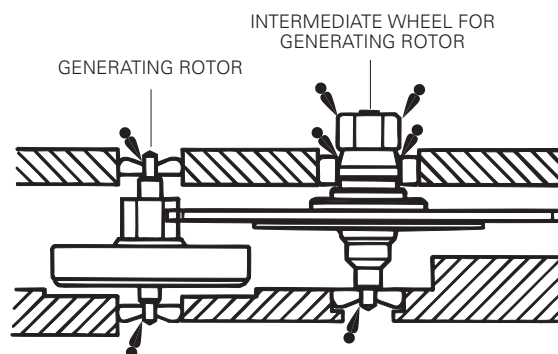


[ CIRCUIT BLOCK for Cal. 5M6 Series ]

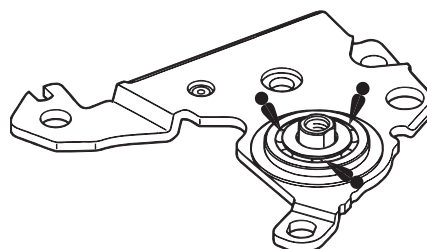
## ②⑧ OSCILLATING WEIGHT BRIDGE SCREW

## ③⑦ OSCILLATING WEIGHT BRIDGE

- Before tightening the OSCILLATING WEIGHT BRIDGE SCREW, check that the upper pivot of the GENERATING ROTOR is inserted properly into the pivot jewel.
- Be sure to lubricate the upper and lower pivots of GENERATING ROTOR and INTERMEDIATE WHEEL FOR GENERATING ROTOR with the proper oil quantity specified in the illustration.



Lubricate the ball-bearing of the OSCILLATING WEIGHT BRIDGE as shown in the illustration at right.



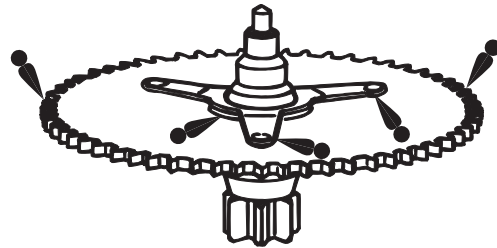
Lubricating:  : AO-3

## ③① INTERMEDIATE WHEEL FOR GENERATING ROTOR

### • Lubricating

Refer to the illustration at right.

**Note:** Be sure to observe the position, type of oil and quantity of the lubrication specified in the illustration.



## ④① FOURTH WHEEL AND PINION

## ④② THIRD WHEEL AND PINION

## ④③ FIFTH WHEEL AND PINION

## ④④ STEP ROTOR

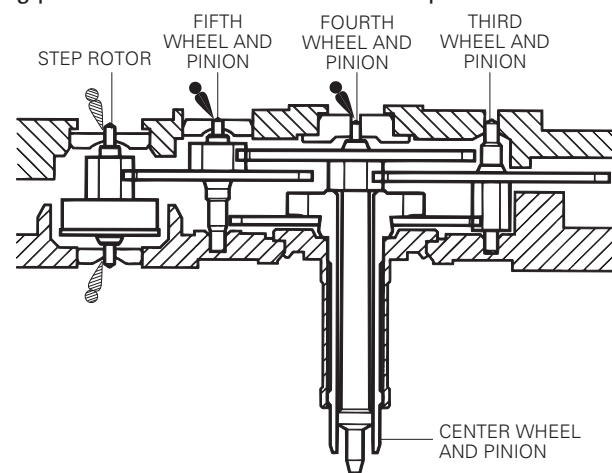
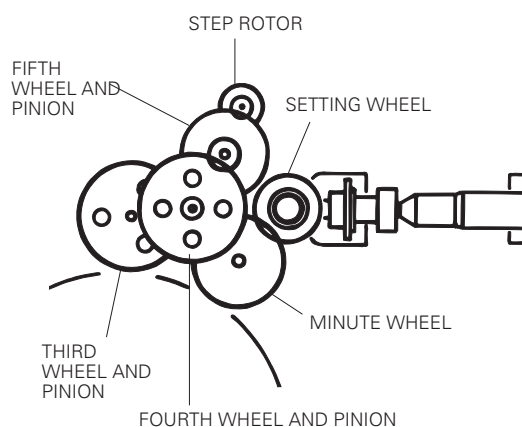
## ④⑤ MINUTE WHEEL

## ④⑥ SETTING WHEEL

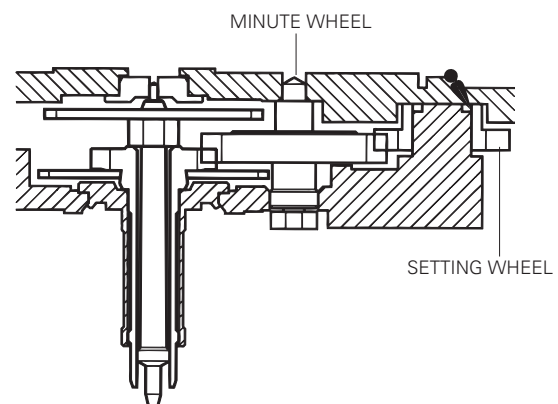
## ⑤③ CENTER WHEEL AND PINION

### • Setting position and lubricating

Refer to the illustrations below for the setting position and lubrication of the respective wheels.



**Note:** Be sure to observe the position, type of oil and quantity of lubrication specified in the illustration.



Lubricating: ● : AO-3

◐ : AO-2

③⑨ TRAIN WHEEL SETTING LEVER

④⑦ SWITCH LEVER

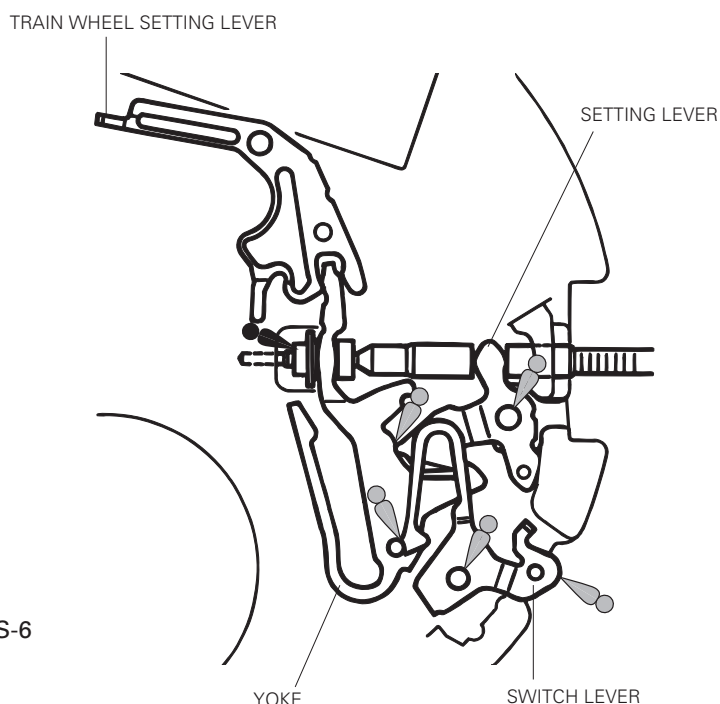
④⑧ YOKE

④⑨ SETTING LEVER

• **Setting position and lubricating**

Refer to the illustration at right.

**Lubricating:** ● : AO-3  
○ : SEIKO Watch Oil S-6



## II. Value checking and adjustment

The procedures for value checking and adjustment explained here pertain to both Cal. 5M82A and 5M83A.

● **Coil block resistance**

1.7 K $\Omega$  ~ 2.1 K $\Omega$

● **Generating coil block resistance**

280  $\Omega$  ~ 380  $\Omega$

● **Current consumption**

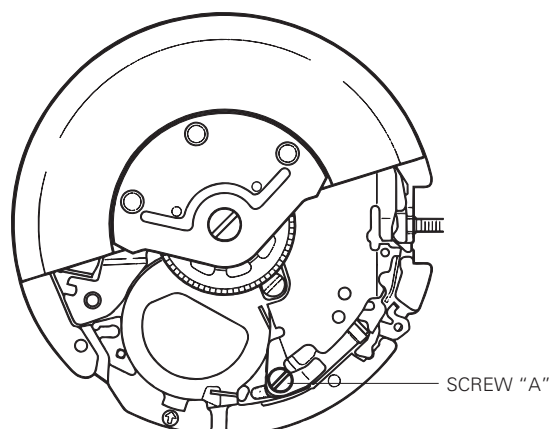
For the whole movement : Less than 0.80  $\mu$ A (with 1.55 V supplied from a battery)

For the circuit block alone : Less than 0.20  $\mu$ A (with 1.55 V supplied from a battery)

### How to measure the current consumption for the whole movement

1. Make the movement ready for measurement.

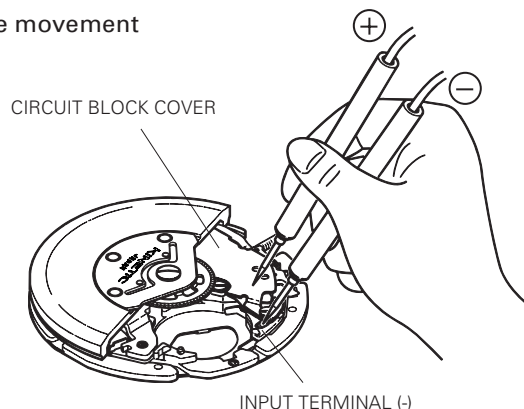
- 1) Follow the disassembling procedure illustrated in this manual until you remove the rechargeable battery unit.
- 2) Temporarily tighten the screw "A" in the illustration, taking care not to tighten it excessively.
- 3) Install the oscillating weight wheel and oscillating weight and then tighten the oscillating weight screw.



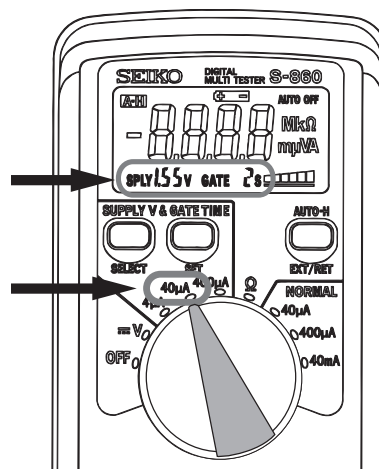
## ● Value checking

How to measure the current consumption for the whole movement

1. Remove the RECHARGEABLE BATTERY UNIT and INSULATOR and the BATTERY CLAMP WITH SCREWS, and then reassemble the OSCILLATING WEIGHT WHEEL and OSCILLATING WEIGHT, and tighten the SCREW temporary in order to make the movement ready for measurement.
2. Connect the (-) probe of the tester to the input terminal (-) of the CIRCUIT BLOCK and (+) probe to the CIRCUIT BLOCK COVER.



\* When measuring the current consumption using the SEIKO digital multi-tester (S-860), use the range of **40  $\mu$  A** of **SUPPLY V (= 1.55 V)** & **GATE TIME (2 S)**

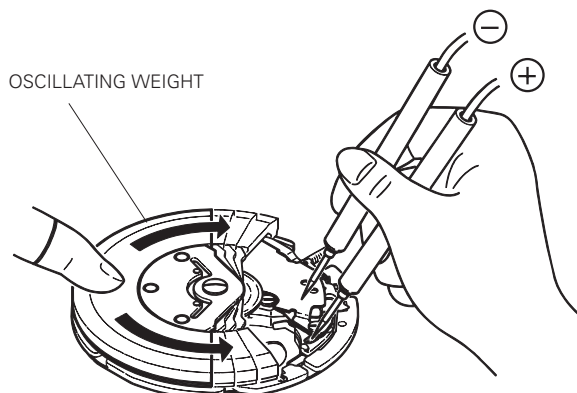


3. Swing the OSCILLATING WEIGHT as the Illustration for more than three seconds so that the movement detects the electricity generation and it turns to the normal hand movement mode.

Note: When swinging the OSCILLATING WEIGHT, take care so as not to touch the probes of the tester.

4. Wait for more than 10 seconds until a stable measurement is obtained, and then read the measurement.

5. Make sure the read value is less than 0.80  $\mu$ A.



### Notes:

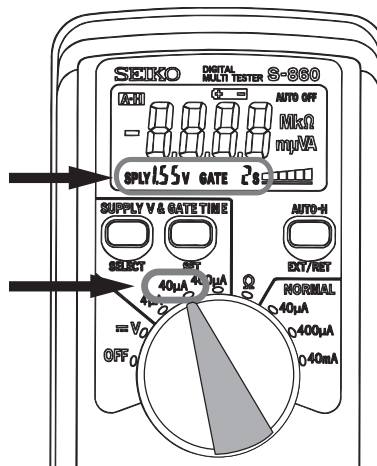
\* Light may increase the current consumption, resulting in an inaccurate measurement. If the current consumption exceeds the standard value, protect the movement from light with a black cloth or the like, and make a measurement again.

\* When the current consumption for the whole movement exceeds the standard value while the current consumption for the CIRCUIT BLOCK alone is within the standard value range, a driving pulse may be generated to compensate for the heavy load applied on the gear train, etc. 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

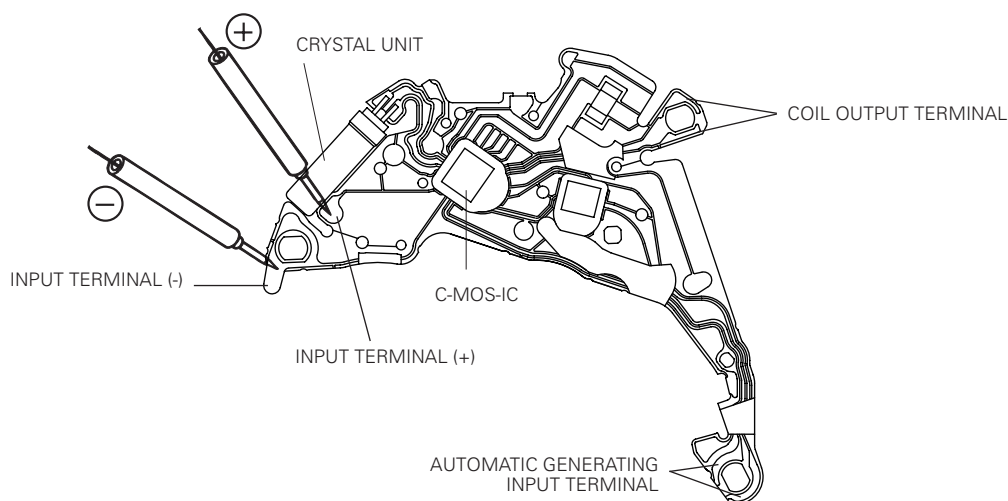
1. To measure the current consumption for the CIRCUIT BLOCK alone, connect each probe to the appropriate positive(+) or negative(-) input terminal of the CIRCUIT BLOCK (please refer to "Structure of the circuit block" below)."

\* When measuring the current consumption using the SEIKO digital multi-tester (S-860), use the range of **40  $\mu$  A** of **SUPPLY V (= 1.55 V)** & **GATE TIME (2 S)**



2. Read the measurement when a stable measurement is obtained.
3. Make sure the read value is less than 0.20 $\mu$ A.

## [ Structure of the CIRCUIT BLOCK ]

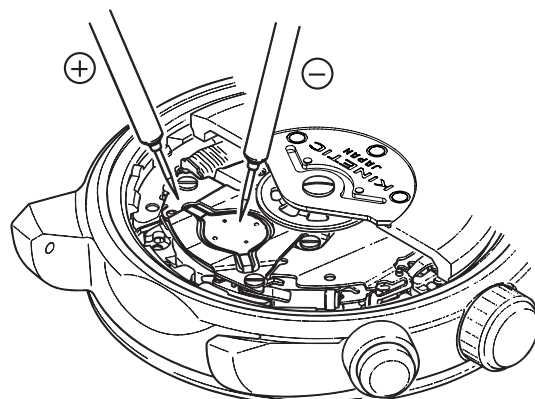


### Notes:

\* Light may increase the current consumption, resulting in an inaccurate measurement. If the current consumption exceeds the standard value, protect the movement from light with a black cloth or the like, and make a measurement 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.")





## Notes:

- \* When applying the minus probe of the tester to the rechargeable battery, take care not to short-circuit the lead terminal (-) and the rechargeable battery clamp.
  - \* If a short-circuit has occurred, leave the watch untouched for more than 10 minutes, and measure the voltage again, checking that a stable measurement is 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 guidelines of normal/defective decision]

Initial voltage	Guidelines of normal/defective decision
<b>0.9-1.0 V</b>	After charging, the voltage of rechargeable battery has increased 0.1 V or more from the initial voltage.
<b>1.01-1.2V</b>	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 apply only when the initial voltage is within the range between 0.9 V and 1.2 V.
- \* The amount of electricity generated by swinging the watch varies depending on the manner in which you swing it, such the rate of swinging and the size of the swinging arc. Please note, therefore, that checking through the procedure above provides only the guideline of normal/defective decision.